THE MANAGEMENT CONTROL OF AVIATION FLEET MAINTENANCE FUNDS

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THESIS

THE MANAGEMENT CONTROL
OF
AVIATION FLEET MAINTENANCE FUNDS

by

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and
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20. (continued)

and the AFM management control system of a Commercial Airline.

The conclusions provide management with an evaluation of the strengths and weaknesses of the AFM management control system. Strengths include centralized budget formulation and standardized cost collection. Weaknesses include the lack of field activity involvement in the budget process, of measurement goals, of variance reviews, and of performance incentives. Recommendations are provided to assist management in improving AFM financial and management control.

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The Management Control of Aviation Fleet Maintenance Funds

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September 1980

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I. INTRODUCTION

A. GENERAL

To assist the United States of America in fulfilling established National Security Objectives, the United States Navy is responsible for operating and maintaining a fleet of approximately 3900 military aircraft. The U.S. Navy's aircraft inventory is valued in excess of 20 billion dollars (priced at original cost). [23]

The successful achievement of the United States' security goals is in part dependent upon the Navy's capability to project sea power and local air superiority throughout the world's oceans and seas. Satisfying this broad goal requires a comprehensive aircraft training mission designed to prepare air forces for combat readiness. This training mission is both expensive and demanding.

The expense for air forces training to achieve combat readiness was expected to cost the United States Navy for the Fiscal Year 1979, 742 million dollars. The total anticipated hours to be flown by the United States Navy for the Fiscal Year 1979 was 1.8 million hours or an average 456 flying hours per aircraft (unweighted average). [23]

The flying hours cost estimates are based on a system, called the Flying Hours Program (FHP), which is designed to equate a cost estimate relative to a specified combat readiness criteria. The FHP aggregates the complex statement of

all requirements, budgeted hours, associated costs, fuel usage and readiness milestones for United States Naval Air Forces into hours and dollars.

The cost estimates developed for the FHP are essentially based on the direct costs for aircraft operation and divided between the following two categories:

1. Fuel (and minor administrative costs)
2. Maintenance

The FHP specifically excludes the costs of the military salaries for the personnel flying and maintaining the aircraft. In addition, the FHP also excludes the cost of major repair work and most repair parts that cost over five thousand dollars.

Although the FHP excludes several very significant costs, fuel and maintenance costs do represent a significant portion of the U.S. Navy's annual budget estimate for operating forces.

The maintenance segment of the FHP estimate, formally known as Aviation Fleet Maintenance (AFM), funds the purchase of consumable supplies, repair parts, and some special labor and services used in the maintenance and repair of aircraft. AFM budgets are tied directly to the number of hours flown and represent about 30% of the total FHP budget. The remainder of the FHP budget funds fuel purchases. For the Fiscal Year 1980, the AFM budget estimate for aircraft assigned to the operating fleet was 400 million dollars. [23]

The management of AFM funds presents several problems. First, although the budget is directly tied to flying hours, in reality the obligation of AFM funds is not directly linked to the number of aircraft hours flown. Second, the maintenance function is a service function and, in the absence of natural incentives for economy, activities may attempt to obligate funds based on budgeted funding goals without consideration for actual dollar requirements. Third, again, because the maintenance function is a service function, measures of output may not be readily available. Therefore, an accurate method of measuring efficiency and effectiveness may not be available.

B. OBJECTIVES

The objectives of the thesis were:

1. To review the management of AFM funds in the United States Navy to determine if there is an adequate management control system in effect;

2. To review and compare the maintenance fund management philosophies of the United States Navy and a major civilian airline to determine if improvements could be made in either as a result of practices proven in the other organization;

3. To provide recommendations to improve the management of aircraft maintenance funds.

C. METHODOLOGY

The thesis methodology consisted of the development and presentation, through the use of empirical study and literature research techniques, of information gathered from four sources. This information was arranged and analyzed. The results of the analysis were then used to draw conclusions relative to the objectives set forth in the previous paragraph.

The authors based the information collection process on the following four areas:

1. The development of a theoretical foundation for evaluating the management control systems of profit and nonprofit organizations. Information for this area was gathered from a literature search of scholarly texts and current management periodicals.

2. The determination of the United States Navy's policies and instructions for the management control of AFM funds. Information for this area was gathered from a literature search of current United States Navy directives and instructions. In addition, the authors conducted telephone and in-person interviews of United States Navy personnel at the Commander's Staff, Naval Air Forces, United States Atlantic and Pacific Fleets. The surveys were constructed using the information on the theoretical foundation for evaluating management control systems.

3. The determination of the United States Navy's maintenance funds management control practices. Information for this area was gathered primarily from surveys conducted at Continen-

tal United States Naval Air Stations. The surveys were tailored for the activities based on the information collected in sections 1 and 2 above.

4. The determination of a major civilian airline's maintenance fund management control policies. Information for this section was gathered from interviews conducted with airline personnel. Questions used in the interviews were developed from the information in Section C.1 above and from a review of the airline's maintenance funds management policy directives and instructions.

D. ORGANIZATION

The thesis is comprised of eight chapters and four appendices. Chapter I introduces the AFM environment and describes the thesis objectives and methodology.

Chapter II provides a review of literature on management control systems. The objective of the chapter is to develop a theoretical basis for evaluating the management control in organizations. This information will be used in later chapters to evaluate the management control of maintenance funds.

Chapter III provides an in depth background on the United States Navy's maintenance fund budgeting and authorization process. This background includes a description of the AFM funds flow from the United States Congress through the President, the Office of Management and Budget, the Department of Defense, and the Department of the Navy to the Naval Air Stations. Note: Appendix A presents a glossary of United States

Navy financial management terminology.

Chapter IV traces the obligation process of Navy AFM funds. It includes a description of the material requisitioning process, the financial accounting process, and a brief description of the maintenance process.

Chapter V contains the results of the surveys conducted with the Commander's Staff, Naval Air Forces, Atlantic and Pacific Fleets.

Chapter VI contains the results of the surveys conducted with the United States Air Stations.

Chapter VII contains a detailed description of the maintenance funds management control philosophy used at a major civilian airline. The description includes a summary of the airline's budgeting techniques and practices as well as, the methodology used by the airline in determining maintenance funds efficiency and effectiveness measurements.

Chapter VIII provides a comparison between the survey results and implications for AFM management. The comparisons made include differences and similarities between the United States Navy aviation maintenance financial and management control systems and the Commercial Airline maintenance financial control system. The chapter also contains conclusions and recommendations developed from the information presented. In addition, possible topics for future thesis study are identified.

II. THE CONTROL FUNCTION

A. GENERAL

Control is defined in Webster's New College Dictionary as " ... to exercise restraining or directing influence over." Control functions of one form or another permeate all social and physical systems. This chapter will discuss the control function, first in general terms, and then as it is manifest in management control systems. Next the characteristics of a good management control system will be presented. The chapter will conclude with a section outlining the differences between profit and non-profit organizations.

B. SYSTEM CONCEPTS

Murdick and Ross note that, "a system is a set of elements, such as people, things, and concepts, which are related to achieve a mutual goal." [5 p.4] Systems can be broadly classified by function, by purpose, by their structure, as well as other criteria. One of the more general categorizations made normally utilizes the distinction between physical and social systems. A physical system is composed of inanimate elements and has processes governed solely by the physical sciences. An example of a physical system is a home heating system. A social system is composed primarily of living elements and the processes are governed by both the physical and social sciences. An example of a social system is the United States Navy.

Social systems are normally called organizations.

To assist in achieving the mutual goal most systems include a control system. The control system functions in a way that keeps the actions of the various system elements directed towards the goal.

Control systems are utilized in both physical and social environments. Much of the theory of control systems was developed from the analysis of control system applications on physical systems. Normally, the social systems are vastly more complex than physical systems and the behavior of elements within the social systems is much less certain than the behavior of the elements within physical systems. Nevertheless, the fundamental concepts of control systems operating in either environment are identical and therefore the analysis conducted to date on physical systems can provide useful insight into the basic concepts universal to all control systems. [1] [28]

Analysis and application of control systems to physical systems have been evolving since man first began to use tools. The art of utilizing control systems developed more rapidly during the Industrial Revolution and in particular with the advent of steam power. In the more recent past, the availability of high speed computing equipment has further accelerated the development of the body of control system theory and expanded its application to increasingly complex systems. As stated by Anand, "The modern approach, having been established as a science is being applied not only to traditional

control systems, but to newer problems like urban analysis, econometrics, transportation, biomedical problems, and a host of similar problems that affect modern man." [1 p.2]

The basic element in control systems analysis is the dynamic system governed by a series of differential equations assuming a cause-effect relationship. [1] A block diagram of a simple physical system is shown as Figure 2.1

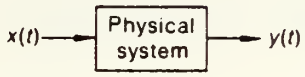


Fig. 2.1 A physical system (2)

In the diagram x(t) represents the input and y(t) represents the output. Again the basic assumption is that the system acts in some manner utilizing the input to produce the output. In the absence of any input the production of output would cease. A simple control system added to the physical system of Figure 2.1 is presented as Figure 2.2.

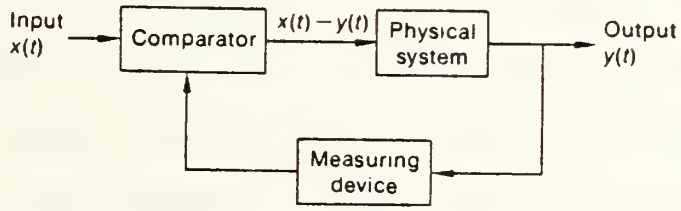


Fig. 2.2 A simple control system (2)

In this example the output is measured relative to the input and the difference becomes the new or controlled input. The

process of returning a portion or measurement of the output to the input section is called feedback.

The principal elements of a control system are:

a. a process or system that utilizes input to produce output in a cause-effect relationship;

b. a means to measure output, compare it with some standard, and feedback the information on the measurement to the input stage of the process;

c. a means to adjust the input, or the system process, utilizing the feedback information to cause an adjustment in output.

An example of a simple physical system is the standard home heating system. A block diagram of such a system is shown as Figure 2.3 below:

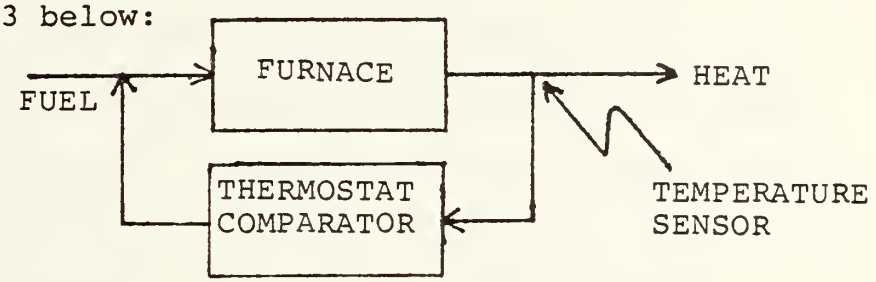


Fig. 2.3 A home heating system

Note- Technically the thermostat does not measure directly the heat output of the furnace. It measures the reaction of that output with the overall heat energy (enthalpy) state in the room or house. It is assumed in this simplification that a direct relationship exists between furnace heat output and mean room temperature. In most home heating situations this assumption is valid, so the simplification does not flaw

the control system logic.

In this example the furnace is the physical system which uses fuel oil or natural gas as input to produce heat as output. The cause and effect relationship is valid. The thermostat or comparator measures the room temperature and compares that measurement with some standard set previously in the thermostat, for example 68°F. The result of that comparison in the form of an electrical signal is returned to the input stage, usually a solenoid valve on the fuel supply. Finally, using the electrical signal to operate the solenoid valve, fuel is added to the furnace in the proper quantity to produce enough heat to bring the room to the desired temperature standard.

As noted on the previous page, this representation is a simplification of a thermostat- furnace control system and in reality several other variables are significant contributors to the systems performance. Amand describes a general model that accounts for multiple variables, as well as, other system disturbances. The model is reproduced in block diagram as Figure 2.4 below:

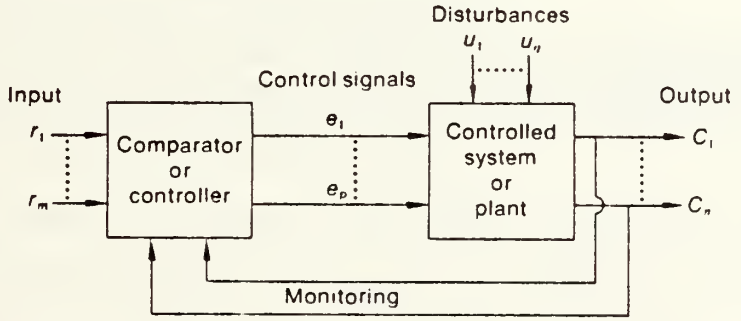


Fig. 2.4 A general control system (2)

The model is described verbally as follows:

> A generalized control system is shown in Fig. 2-4. The reference of input variables $r_1, r_2, \ldots, r_m$ are applied to the comparator or controller. The output variables are $c_1, c_2, \ldots, c_n$. The signals $e_1 e_2 \ldots, e_p$ are actuating or control variables and are applied by the controller to the system or plant. The plant is also subjected to disturbance inputs $u_1, u_2, \ldots, u_q$. [1 p.3]

Although the general model allows for more complex relationships and multivariate operations the fundamental assumptions on cause-effect and the principal elements of the system remain applicable.

Applications of control systems theory to social organizations, particularly businesses, are commonly discussed in general management texts. The role of the control mechanism is usually subject to additional elaboration because of the complications involved in measuring and evaluating human performance. Webber notes

> Feedback control picks up at the end of the planning process when the specific goals of an individual, department, or organization become the expected performance against which management will evaluate actual results. The steps in control are as follows:
>
> 1. Communicating specific goals.
> 2. Measuring actual performance.
> 3. Reporting the actual performance to appropriate people.
> 4. Comparing actual performance with specific goals.
> 5. Deciding to do nothing, to correct behavior, or to modify goals. [28 p.298-299]

The diagrams shown in various management texts are essentially similar to those presented in physical systems control theory texts. As an example the following diagram is taken from Webber's work on management.

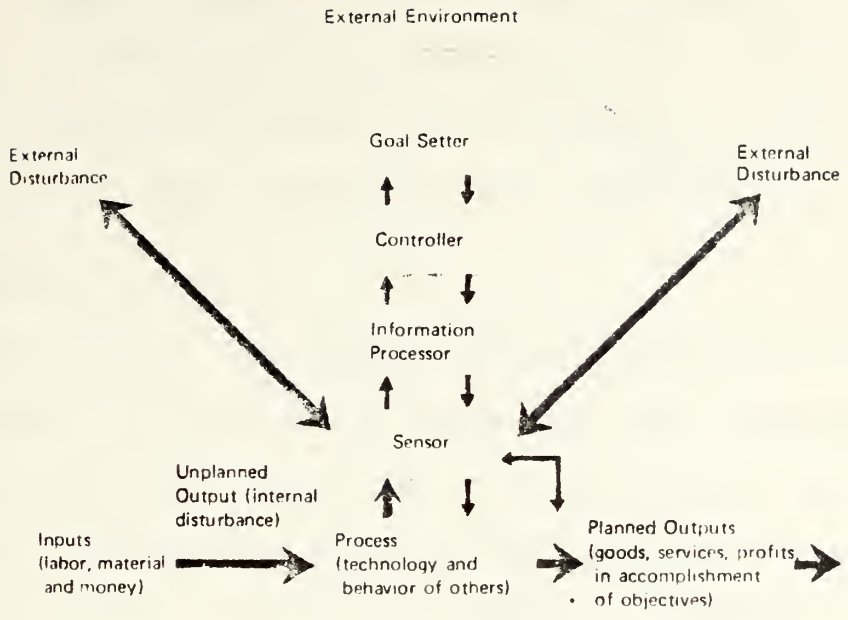


Fig. 2.5 Management control [28]

In the Webber diagram the information on the output or on the action in process is passed through the chain of sensor, information processor and controller to the goal setter. If goals had been previously set, the controller makes the comparison between the measured, processed information and the specified goals and directs that appropriate action to bring the process or output into conformance with the goals. In the situation where goals have not been previously set, the goal setter then becomes a continuously active participant in the control process and the roles of the goal setter and the controller would be combined. Such a system would probably function in a less than optimal manner because of lack of information about the goals at the process level.

In the Webber example the procedures to sense, process, and compare information are called controls. The aggregation of these procedures throughout the organization into a formal system is called the management control system.

C. MANAGEMENT CONTROL

In their classic text on management Koontz and O'Donnell describe the five functions of management as; "planning, organizing, staffing, directing, and controlling." [14 p. 48] Other texts on management vary in the terminology used to describe the managerial functions. However, virtually all authors list control as a necessary element in management.

Although the authors on management agree that control is a necessary function, predictably, they disagree, to some extent, on the definition of control. To assist in developing the general concept of management control several of the definitions from management texts follow:

1. Executive control [is] some sort of systematic effort to compare current performance to a predetermined plan or objective, presumably to take any immediate action required. [13 p.24]
2. The managerial function of control is the measurement and correction of the performance of subordinates in order to make sure that enterprise objectives and the plans devised to attain them are accomplished. [14 p.639]
3. Management control is the process by which managers assure that resources are obtained and used effectively and efficiently in the accomplishment of the organization's objectives. [2 p.17]
4. Control consists of verifying whether everything occurs in conformity with the plan adopted, the instructions issued, and principles established. It has for an object to point out weaknesses and errors in order to rectify and prevent recurrence. [9 p.107]

5. Management control is a systematic effort to set performance standards consistent with planning objectives, to design information feedback systems, to compare actual performance with these predetermined standards, to determine whether there are any deviations and to measure their significance, and to take any action required to assure that all corporate resources are being used in the most effective and efficient way possible in achieving corporate objectives. [15 p.3]

Williams, Koontz and O'Donnell, and Fayol all stress the aspects of comparing performance with organizational objectives and making corrections as necessary to achieve those predetermined objectives. These definitions follow in a broad sense the principles of the physical control systems discussed earlier in this chapter. Mockler maintains that these definitions may mislead the reader in that, "other aspects of the control function not mentioned in these definitions have a much greater impact on effective control action." [15 p.3]

Anthony discusses control in much broader principles addressing the goals of efficiency and effectiveness in the utilization of resources in achieving other organizational objectives. There is little argument that resources should be utilized efficiently and effectively but Anthony's definition provides no direction as to how this is to be accomplished.

Mockler, having benefited from the other authors' earlier work, synthesized his definition from the components of the physical control system theory and from the work of the management specialists. Breaking the definition into sections,

the process of management control can be described in terms of five steps. Those steps are:

1. to set performance standards consistent with planning objectives,
2. to design information feedback systems,
3. to compare actual performance with these predetermined standards,
4. to determine whether there are any deviations and to measure their significance,
5. to take any action required to assure that all corporate resources are being used in the most effective and efficient way possible in achieving corporate objectives.

Each of the five steps is based on one or more concepts that act as logical foundations for the actions described in the steps.

1. Step One - Setting Standards

Mockler maintains that "the setting of standards is the most critical aspect of control." [15 p.3] The individual standards may be set for cost or level of output or for whatever function that is the focus of control. Mockler further notes that the standards should be "realistic", "clear" and preferably set in a participatory manner by those using the standards. All of these qualities relate to the social phenomenon of motivation. In social systems, motivation is the basic foundation on which the entire control system function

rests. With respect to standards, Stedry in his research on budget control notes that, "The setting of a standard is insufficient of itself to assure or even invite compliance. The problem of directing activities toward a goal is one of 'motivation' ..." [18 p.12]

In setting standards motivation toward achieving those standards is enhanced by attention to the concepts of controllability and participation. If the user is to be motivated to internalize the standard, for instance a cost control standard, and then attempt to manage costs to achieve the standard, one must have control over the factors that affect costs. Anthony notes that

> The control system should provide a way of separating the cost and revenue items that are controllable by the head of the responsibility center (organizational unit to which the standard applies) from the items which he cannot control." [3 p.9]

A large amount of managerial and psychological research has been conducted relative to the effects of participation in setting standards and then to the subsequent motivation to conform to or achieve those standards. Hofstede in his research on budget control notes, "If they (those to whom the standards apply) do participate, however, they appear to be much more motivated to fulfill the financial standards that are set." [1] p.4] Anthony notes in discussing participation as a concept of management control, that a performance standard is likely to be met only if the person being judged agrees that the standard is equitable. Following this line

of logic he states," The best way to assure this agreement is to ask the person whose performance is to be measured to participate in the process of setting the standard." [3 p.12] Although participation is generally accepted as a motivator the academic community is not unanimous in this area. Charnes and Stedry argue that, "It is not clear that a goal set by a superior is any more 'imposed' than a social norm or need be more abhorant." [5 p.18] They conclude, from their research:

> Therefore models with which we shall deal here do not distinguish between goals that are set by an individual (or organization) which are the presented goals of a superior and those which are set with reference to other external or (presently) internal forces. The goals which are accepted by an individual or organization, however arrived at, and the rewards perceived as being associated with them, whether tangible or intangible are of interest. [5 p.189]

Finally, the standards must be communicated to the user if they are to be effective in controlling behavior. When participation is used in setting standards the communication is usually assured. If the standards are set by individuals outside the immediate organization, that is, someone other than the first level supervisor, it is especially crucial that the standards be communicated and understood by the user.

2. Step Two - Designing the Information Feedback System

The performance of an organization is normally judged in terms of its input and output. Management control literature suggests that the feedback system should collect and measure only enough information to be useful in judging this

performance. This may seem to be an intuitively obvious recommendation but it is often the case that information system data requirements proliferate under the guise of "the more information collected from the system the more that managers can deduce about system performance." Such systems develop considerable drawbacks. First, data collection has its own costs and these costs normally rise directly with the amount of data collected. Secondly, large amounts of data tend to obscure the really important data concerning the system. [3] Drucker notes that control is the principle, or concept, of economy and states that an important question and, in his estimation, the first question to be asked in designing a control system is, "What is the minimum information I need to know to have control?" [8 p.499]

In addition, in designing a feedback system, the manager should be aware of the concept of "the basis of measurement" noted in Anthony [3]. The system should collect cost (or other) information for, "three key questions (that) must be considered simultaneously: (1) How much was accomplished? (2) How good was it? (3) How much did it cost?" [3 p.11] The information required to answer these questions should only be that which is "significant" [3] in judging performance.

3. Step Three - Comparing Actual Performance With Standards

In many control systems the comparison of actual performance with the control standards is accomplished automatically and management emphasis is shifted to determining the

significance of the deviations. However, Anthony notes that the information may not always be logically compared. He states that

> It seems obvious that control is not possible unless actual performance and the standard against which it is being measured are comparable; yet instances of complete noncomparability do occur. This often happens when a management accounting system is separated from the financial accounting system ... [3 p.13]

In addition Anthony notes that inconsistencies may arise when different aspects of performance are measured in separate control systems. As an example a supervisor may be measured under standards of cost control in one subsystem and quality control in another. In such instances comparisons may confuse the manager or result in conflicting signals to the system or supervisor. Although much of the above discussion could be considered to be related to the design step, the manager who begins work at an organization with a management control system in effect should be aware of some of the pitfalls of accepting system generated performance comparisons.

4. Step Four - Determining Deviations and Measuring Their Significance

One of the more powerful managerial aspects of management control systems is their capability to allow managers to focus on the currently critical areas of the organization that require attention, while allowing the areas performing to standards to continue routine operations. This concept is known as "management by exception" and is implemented by setting the level of significance for deviations from performance

standards. The practice of setting limits on the size of the deviation considered significant is commonly associated with "red flagging". If a deviation in performance occurs that is above, or below in some cases, the limit set, that performance indicator for that individual or section is said to be "red flagged" for management attention.

Two ramifications of the process should be considered in using or designing this type of system. First, the relative size of the limits should be planned to minimize the number of "red flags" generated during normal operations. If the limits are set too tight, an inappropriate level for flagging deviations could result in a multitude of alarms when operations are functioning normally. Conversely, if the limits are set too loosely, then there may be no "red flags" in the situation where the operation is in serious trouble. There are no general quantitative rules for setting significance levels but two major factors should be considered. The amount of managerial time available to investigate problems is a binding constraint on the number of analyses or investigations conducted. If the system is generating more alarms than a firm's managers have time to investigate, then backlogs will occur and really serious problems may be overlooked. Also, the levels and standards should take into account normal business cycles. What may be a significant deviation in July may be perfectly normal in December.

A second consideration in setting significance levels for deviations from standard performance is their psychological impact on performance. The levels are not set in isolation and though designed to alert management to potential performance problems often control performance in and of themselves. Drucker notes that controls are neither "objective or neutral". [8] In a complex organization with a multitude of controls, generating performance that produces no "red flags" can supersede the motivation to strive for the standards, and in effect performance just under the "red flag" level could become the new standard.

5. Step Five - Taking Action to Assure Resources are Used Effectively and Efficiently

The final step in the management control process is the only step designed to require direct action to alter performance of the organization and in some texts presupposes that the action is corrective in nature. In physical systems the correction step is relatively easy to implement in that machines are insensitive to the implications of deficiency. In social systems the implication that performance is deficient and has been singled out by management for corrective action, presents a sensitive and sometimes volatile organizational situation. Mockler notes the significance of the problem;

> When corrective action is required, considerable skill is required to take the action in a way which does not destroy initiative and creativity within a business organization. Continual emphasis on finding errors and telling people they have made mistakes can undermine confidence in a control system, and shift attention from doing things better to avoiding doing things wrong. [15 p.4]

Mockler's statement relates to the earlier discussed foundation of motivation in social control systems. Corrective action is easier to implement if there was previous agreement, within the organization as to the standard and the action to be taken in the event of a deviation from the standard.

A second aspect of the final step is the introduction of effectiveness and efficiency into the process of achieving corporate goals. Anthony and Herzlinger define efficiency as, "the ratio of output to input or the amount of output per unit of input." [4 p.19] They note, though, that a measure of efficiency can be difficult to achieve in some organizations because of difficulties in measuring output. However an approximate measure can be developed that compares actual input, for instance costs, to some standard. Some difficulties arise in using this type of system because of the inherent problems in setting an artificial standard. Anthony and Herzlinger assert that some measure of efficiency, even with drawbacks, is good for the organization because of the measure's goal setting characteristics.

The concept of effectiveness is defined by Anthony and Herzlinger as, "the relationship between a responsibility center's outputs and its objectives. The more these outputs contribute to the objectives, the more effective the unit is." [4 p.19] Again Anthony and Herzlinger note potential problems in measurement, "Since both objectives and outputs are often difficult to quantify, measures of effectiveness

are difficult to come by." [4 p.19]

The concepts of effectiveness and efficiency should apply throughout the management control system and generally throughout all of the functions of management. In a business organization these concepts are jointly measured by profit. Anthony and Herzlinger note that ... "one important objective in a profit-oriented organization is to earn profits ... the amount of profit is a measure of effectiveness ... Also ... since profit is the difference between revenues (output) and expenses (input) profit is also a measure of efficiency." [4 p.19] Nonprofit organizations are usually unable to find a single entity that includes measures of effectiveness and efficiency.

D. CHARACTERISTICS OF MANAGEMENT CONTROL SYSTEMS

To implement a management control system it is essential to understand the steps involved in the design and operation of the system. For the system to operate properly the manager should also have an understanding of the characteristics of a system in addition to a grasp of the operational steps required. Anthony and Herzlinger list six characteristics of a management control system. Those characteristics are [4 p.32]:

> First, the management control system should be a "total system in that it concerns all parts of the organization's functions. Anthony and Herzlinger note that, "It needs to be a total system because an important management function is to assure that all

parts of the operation are in balance with one another, and in order to examine balance, management needs information about each of the parts." [4 p.32]

Second, the system should encourage "goal congruence" The system should encourage actions that are perceived by the individuals in the organization to be in their own best interests. The result of opposed individual and organizational goals will be less than optimal organizational performance.

Third, the management control system should be "built around a financial structure." Anthony and Herzlinger note that the financial structure is the most convenient and efficient base because of its ability to express various inputs and outputs in common terms such as dollars. This aids in setting standards and comparing performance at the individual level as well as at higher levels in the organization.

Fourth, the management control process "tends to be rhythmic." Various steps and measurements within the system normally occur with consistency over time. For example, the budget process. As a result management is able to anticipate these events and plan to accommodate them in the most efficient manner.

Fifth, the management control system "is or should be a coordinated, integrated system; that is although data collected for one purpose may differ from those

collected for another purpose, these data should be reconcilable with one another." [4 p.33] Variances in the data can lead to contradictory performance assessments and thereby lessen overall system creditability.

Finally, in the management control system "line managers" should be "the focal points of control." The line managers are tasked with the responsibility to produce performance results and therefore should have commensurate authority to carry out those responsibilities. Anthony and Herzlinger state that, "Staff people collect, summarize and present information that is useful in the process ... However, the significant decisions are made by the line managers, not the staff." [4 p.33]

E. CONSIDERATIONS ON PROFIT VS NONPROFIT ORGANIZATIONS

Until relatively recently, the majority of managerial texts related to profit making business organizations. Nonprofit organizations were addressed, if at all, in a section of the publication. The tacit assumptions were that management principles were general in nature and applicable, for the most part, to nonprofit as well as profit organizations. The recognition of unique management problems in large nonprofit organizations such as hospitals, and the absolute increase in the size and role of the federal government has resulted in the emergence of several comprehensive texts dealing solely with nonprofit organizations. These texts argue that although many general management principles apply to nonprofit

organizations, there are some very critical differences in the structure and purpose of nonprofit organizations that complicate the management function. The most significant difference is inherent in the objectives of the two types of organizations. Profit organizations have as a primary objective the generation of a profit. Profit is a measureable output that can be used to determine organizational effectiveness and efficiency.

Nonprofit organizations "exist primarily to render a service." [4 p.2] Their objectives relate to providing the maximum service consistent with resources available. However, Anthony and Herzlinger note, "their success is measured primarily by how much service they render and by how well they render it. More basically (but unfortunately also more vaguely), their success should be measured by how much they contribute to the public welfare." [4 p.2] This vagueness in quantifying organizational output is the central problem in controlling a nonprofit organization. As Anthony and Herzlinger note:

> A nonprofit organization exists to render service rather than to earn a profit. The central management control problem arises because of this difference in objectives. 'Service' is a more vague less measureable concept than 'profit.' It follows then that it is more difficult to measure performance in a nonprofit organization ... In a nonprofit organization the relationship between costs and benefits, and even the amount of benefits, are difficult to measure. [4 p.14]

This absence of a quantifiable relationship between costs and benefits complicates decision making in a nonprofit organization. Without an accurate measurement of the effect of addi-

tional expenditures on organizational objectives an objective decision on resource allocation becomes difficult. As Anthony and Herzlinger note, "Would the addition of another Army division or another aircraft carrier increase our defense posture by an amount that exceeds its costs?" [4 p.41]

In the absence of any quantifiable measures of efficiency objectives of nonprofit organizations, efficiency tends to be assumed if the organization "provides the best service within the allowed budget." In many cases the performance of managers is almost exclusively related to how well they conform to their budgets.

Anthony and Herzlinger note that, "The typical attitude toward budgets is that it is almost sinful not to spend the full amount that is available," [4 p.289] and they propose that, "an alternative course of action is to convince operating managers that a budget reduction, per se, should not be viewed as a punishment and that there is top management emphasis on recognizing and rewarding cost reduction." [4 p.289] Unfortunately the realities of the current forms of nonprofit management and human dynamics will seriously inhibit such a course of action. As Wildavsky notes:

> Every agency wants more money; the urge to survive and expand is built in. Clientele groups, on whom an agency depends for support, judge the agency by how much it does for them. The more clients receive, the larger they grow, the more they can help the agency. Resouce allocation within an agency

> moreover, is much easier with a rising level of appropriations. The prestige of the chief within his agency depends on being able to meet, to some extent, employee demands for higher salaries, amenities, and programs, all of which mean additional funds. Rather than cutting some to increase others, he can mitigate internal criticism by doing better for all or at least not doing worse for anyone. His advantage lies in making such "Pareto optimal" decision within his agency. [29 p.7]

Although the management control process is complicated in nonprofit organizations, the benefits derived in the form of better planning and organizational control outweigh its implementational and operational drawbacks.

F. SUMMARY

Management control is based in part on the principles of general control theory. In its simplest form the control system consists of a physical system that produces output from input in a cause-effect relationship, a means to measure output and feedback the information to a comparing mechanism, and a means of adjusting the process or the inputs based on the results of the comparison of the output with some standard.

The application of control theory to social systems is complicated because of the vagaries of human behavior. In organizations the control process is called management control and is considered one of the five management functions.

Management control consists of five steps:

1. to set performance standards consistent with planning objectives,
2. to design information feedback systems,

3. To compare actual performance with these predetermined standards,
4. to determine whether there are any deviations and to measure their significance,
5. to take any action required to assure that all corporate resources are being used in the most effective and efficient way possible in achieving corporate objectives.

Underlying these steps are several concepts, such as motivation, controllability, participation, management by exception.

According to Anthony and Herzlinger management control systems exhibit or should exhibit five characteristics:

1. the management control system should be a total system,
2. the system should encourage goal congruence,
3. the system should be built around the financial structure,
4. the control process tends to be rhythmic,
5. line managers should be the focal points of control.

A diagramatic model of the steps and characteristics in a management control system is shown as Figure 2-6. This model will be used in subsequent chapters to assist in the evaluation of the management control systems utilized in the United States Navy's Aviation Fleet Maintenance (AFM) management.

CHARACTERISTICS

1. Total System
2. Goal Congruence
3. Financial Structure
4. Rhythmn
5. Line Managers Control

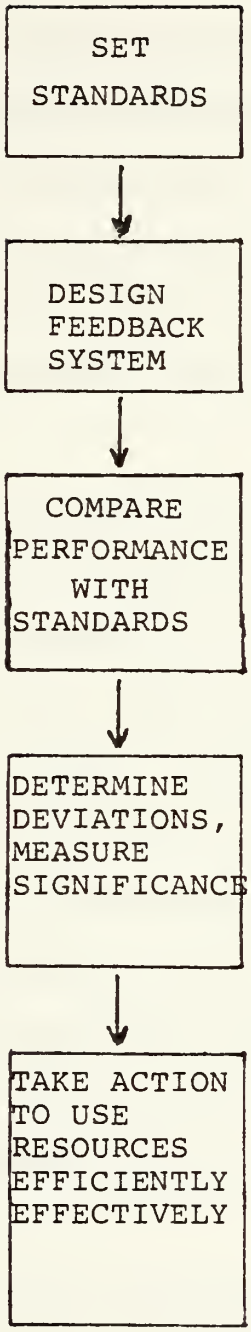

SET STANDARDS
DESIGN FEEDBACK SYSTEM
COMPARE PERFORMANCE WITH STANDARDS
DETERMINE DEVIATIONS, MEASURE SIGNIFICANCE
TAKE ACTION TO USE RESOURCES EFFICIENTLY EFFECTIVELY

Fig. 2-6 Management Control Steps

III. AVIATION FLEET MAINTENANCE (AFM) FUNDS: BUDGET MANAGEMENT

A. GENERAL

The AFM funds source is the Federal Executive-Congressional budget cycle. AFM funds are appropriated by the budget cycle process and distributed throughout the United States Navy for use to purchase consumable aviation parts and maintenance material either from local inventories or directly from other military or commercial suppliers. As an example of the funds flow from Congress to an operational Naval unit is presented in Exhibit 1.

The primary phases of the Executive-Congressional budget cycle were established by the Congressional Budget and Impoundment Control Act of 1974. The legislation was enacted to resolve several problems and difficulties that Congress was experiencing with the Federal budget process. The specific problems were: problems with verifying the accuracy of Executive budget request estimates; problems of coordinating the internal Congressional budget process; problems with forecasting the United States economic conditions; problems with approving appropriations prior to the start of the United States government's Fiscal Year; and problems with the Presidential Impoundment of Funds.

The Congressional Budget and Impoundment Control Act of 1974 to resolve these problems through the establishment of new internal Congressional committees and procedures. The

significant changes included:

1. The adoption of the 1 October to 30 September Fiscal Year
2. The requirement that the President's annual budget be submitted to Congress in January, none months prior to the start of the Fiscal Year
3. The establishment of the Congressional Budget Office, chartered to perform economic analysis and budget analysis.

The objectives of the Congress were to improve the budget review process and to consolidate the budget approval efforts.

B. GENERAL BUDGET DEVELOPMENT

The development of the United States Government Budget is a complex process structured for establishing objectives, designing programs to fulfill the objectives and funding the programs with the necessary resources. Exhibit 2 diagrams the Executive Branch's budget process. The process emphasizes a system of Planning, Programming and Budgeting.

1. Congressional Budget Calendar: Time Table

The President's annual United States Government budget is submitted to Congress in January, nine months prior to the start of the Fiscal Year. For example, the Fiscal Year 1982 budget is submitted to Congress in January 1981. During the next nine months the Congress analyzes the budget, and convenes hearings as a forum for both proponents and opponents to

testify on particular budget items.

Exhibit 3 illustrates the major events that occur during the Congressional review. Additional explanation of the phases shown in Exhibit 3 is as follows:

a. Phase I: The Current Services Budget is the President's budget for the next fiscal year with respect only to the current fiscal year programs and activities. In effect, the current services budget is an estimation of the current fiscal year budget for the coming year. The information provided by the current services budget is helpful to Congress since budget projections are based on current funding levels. It is used as a baseline for analysis and policy initiatives. Fifteen days after Congress convenes, the President submits the budget. Immediately, Congress begins its investigation and analysis of the budget.

b. Phase II: The first concurrent resolution is an estimate of revenue collections and budget expenses. It is a Congressional budget which establishes spending targets, the level of budget surplus or deficit and the level of public debt.

c. Phase III: The Congress follows a two step authorization and appropriation procedure. The authorization step specifies the allowable programs within a specific area, such as the maximum dollar levels that may be appropriated for Naval aviation maintenance support. Once an authorization bill is approved authorizing specific governmental programs, the

spending bill or appropriation bill is prepared.

d. Phase IV: A final resolution is prepared before the Congress approves the budget. This second concurrent resolution reaffirms or revises the first concurrent resolution based on the authorization bills. Reconciliation may be required if the spending targets, debt level or budget surplus or deficit levels have changed. The final action is a budget. [17]

2. Department of Defense (DOD) Budget Formulation

The budget formulation process is divided among three phases: planning, programming and budgeting. The DOD budget is a collection of the best estimates of the three services and the DOD's internal financial requirements which are necessary to fund existing programs and new proposed programs. With the addition of President Carter's initiative for implementing Zero Based Budgeting (ZBB), the DOD budget process and that of the other Executive Departments and Agencies supplemented the budget formulation process with the element of ranking alternatives incrementally above a defined based, called the minimum funding level. In general, this minimum base is the lowest funding requirement that must be funded if the set of programs such as national defense is to be continued. Below this minimum level, no programs would theoretically exist. Above this minimum level, additional funding packages are indicated as bands and justified by the impact or incremental value which they contribute to the overall program

mission. An example of ZBB decision package set and ranking is presented in Exhibit 4.

The DOD budget input and, in particular, the United States Navy portion of the budget input are developed over a two year period. The planning phase of the budget formulation starts in January, two years before the budget is submitted to Congress.

Step one is a threat assessment evaluation of the national defense objectives including a projection of the internal industrial capabilities of the United States and an estimation of resources availability.

Prepared by the Joint Chiefs of Staff (JCS) of the DOD, the threat assessment called the Joint Strategic Planning Document (JSPD) is evaluated, defined and discussed among the key actors: the JCS, the Office of the Secretary of Defense (OSD), the Office of Management and Budget (OMB), and the Services.

The final step in the planning phase is the development of guidance by OSD for the United States Navy and the other services to build the necessary program force structure that will support the threat assessment package and will achieve the national defense objectives.

In the Spring of the calendar year preceding the budget submission to Congress, the United States Navy formulates a program structure that supports the national defense objectives within its missions and limitations.

The programming phase translates the program force structure into resource requirements including manpower, money and material. The United States Navy program force structure package is reviewed by OSD for compliance with guidance, for conformity to the DOD policies and direction, and for mission fulfillment of the established national defense objectives. Differences between OSD guidance and the United States Navy program proposals are resolved through the issue paper cycle. Additionally, during this step the JCS comments on the services programs through the Joint Program Assessment Memorandum (JPAM).

Upon approval of the United States Navy program objectives, budgeting is incorporated into the decision or program package. In effect, the budget translates the planning and programming process into annual funding requirements. The final step of the budget development process arranges the program force structure into appropriation structure. Congressional spending legislation is passed into law based on appropriation format. The resource inputs are the appropriations and the outputs are the programs.

After review and final adjustment, the Secretary of the Navy (SECNAV) submits the proposed budget to the OSD. The Secretary of Defense reviews and compiles the DOD budget for submission to OMB, who compiles the President's budget for submission to Congress. [17, p.34] Exhibit 5 details the DOD budget process.

C. AFM BUDGETING: OPERATING LEVEL

AFM funds are used for the purchase of Navy Stock Fund (NSF), Defense Logistic Agency (DLA) and General Service Administration (GSA) material and supplies required to perform aviation organizational and intermediate levels of maintenance. The United States Navy's Financial Management of Resources (Operating Forces) (Operating Procedures) NAVSO P-3013-2 handbook defines several categories of material and/or services that may be financed with AFM funds. [27] The following is a brief list of those categories:

Category	Use
1. Paints and cleaning	Aircraft preventive maintenance and corrosion control
2. Repair Parts	Repair related aircraft maintenance
3. Pre-issued low cost items	Repair related aircraft maintenance
4. Aviation Fuels	Aircraft engine testing
5. Tools and special clothing	Job performance and safety

A more comprehensive list of items authorized for AFM funding is contained in Appendix B of this thesis.

AFM is a program category for the support of general purpose forces within the Operation and Maintenance, Navy (O&MN) Appropriation. The O&MN appropriation is an annual spending bill that funds the costs of operating and maintaining the physical equipment owned by the United States Navy, such as ships and aircraft. The O&MN appropriation sponsor is the

Chief of Naval Operations (OP-92). An appropriation sponsor has overall responsibility for budgeting, accounting and reporting for all programs financed by the appropriation. For the Fiscal Year 1980, 360 million dollars has been budgeted for AFM requirements. This represents 5% of the total O&MN appropriation (estimate). [23]

The AFM budget requirement is developed annually in the late Spring during the programming-budgeting phase. In June, the Navy Comptroller (NAVCOMPT) (OP-92) issues the budget call which is the formal request directing the administrative commanders to submit budget requirements that are necessary to fund operational and staff functions.

The administrative commanders or Type Commanders are subordinate United States Navy commands responsible for managing and directing operational and staff support units. For example, the Commanders, United States Naval Air Forces, U.S. Atlantic and Pacific Fleets, (CNAL and CNAP) are Type Commanders overseeing the administrative needs of the Naval Air Stations (NAS) assigned to their respective commands. In addition to allocating funds to subordinate activities, the Type Commanders provide policy, direction and guidance within many areas of interest including personnel management, supply and logistic procedures and financial management. The key word Type is significant because the administrative commanders are assigned responsibility for similar activities performing the same missions. For example, Atlantic Fleet aircraft and aircraft carriers are

assigned to CNAL and submarines and submarine tenders are assigned to the Commander, Submarine Forces, United States Atlantic Fleet (COMSUBLANT). Grouping is by specialty and mission.

CNAL and CNAP prepare the AFM budget request based on the change in the maintenance cost per hour for each aircraft model and type. The baseline cost per hour is an estimate of the maintenance dollar costs as related to the number of flight hours flown for specific aircraft models and types. The budget formulation assumes that maintenance costs or AFM obligations are proportional to flight hours. [23]

The data base used for preparing the AFM budget request is the monthly NAS AFM budget Financial Reports and Flying Hour Cost Reports. The Financial Reports provide the obligational data charged to specific maintenance actions recorded for specific aircraft models and types. The Flying Hour Cost Reports indicate the number of flight hours recorded for specific aircraft models and types. The maintenance cost data are totaled for each aircraft model and type from all input sources and divided by the total flight hours for the respective aircraft models and types to compute a weighted AFM cost per hour.

One difficulty with this method of computing maintenance cost per hour as related to the combination of obligational maintenance costs and direct flight hours is the problem of correctly identifying costs to respective aircraft models and types. [23] A significant portion of the maintenance costs

are not directly identifiable to an aircraft model or type but are rather reported as miscellaneous costs. To account for the costs, the Type Commanders allocate the miscellaneous costs to the AFM cost per hour in direct proportion to the total flight hours. For example, if total miscellaneous maintenance costs are 20,000 dollars and flight hours for F-14s represent 10% of the total flight hours; 2,000 dollars would be allocated to the F-14 AFM costs per hour.

This allocation method attempts to relate maintenance costs based on historical costs and flight hours. Unfortunately, the current system of fund control and cost data collection for resources required to accomplish the maintenance mission at both the organizational and intermediate levels of maintenance is still, at best, only a rough estimate. Problems of incorrectly identifying the data base may skew the cost per hour computation. [23]

The aggregation of direct and indirect maintenance costs for each aircraft model and type is used to budget AFM requests. Although the operating forces data base, which includes the NASs is used to develop the AFM budget, the operating forces do not have a direct input to the AFM budget. The Type Commanders derive the budget internally and submit the request to NAVCOMPT. [21]

NAVCOMPT (OP-92) reviews the Type Commanders AFM Cost per hour data for intuitive accuracy. The analysis is based on cost and financial consistency.

D. AFM BUDGETING: NAVCOMPT

NAVCOMPT develops the United States Navy AFM budget request from the maintenance cost per hour for baseline aircraft. The NAVCOMPT weighted cost per hour for baseline aircraft model and type is one of two key data elements used to derive the United States Navy total AFM budget request. The other element is the type aircraft annual flight hours.

The formula to compute annual flight hours is based on the following factors: forces, crews, and hours.

1. Forces is the number of aircraft to be operated, on the average, for the fiscal year. The Flight Hours Program (FHP) forces levels are derived from the Aircraft Program Data File (APDF) which is a classified document containing the number of aircraft squadrons, the number of each aircraft type/model/series and physical aircraft assignment location throughout the United States and overseas naval air stations.

2. Crews is the flight crew manning factor that has been derived which determines the number of crews required for a squadron to carry out its assigned mission. The factor is known as the Crew/Seat Ratio (CSR).

3. Hours is the number of flight hours required to maintain the average flight crew qualified and current to perform the primary mission of the assigned aircraft; to include all-weather/day/night/carrier operations as appropriate. For each type aircraft, the United States Navy has determined, through experience, the hour milestones to maintain stated objectives.

The yardstick is Primary Mission Readiness (PMR). Force Levels (FL-ACFT) Crew Seat Ratio (CSR), and PMR hours are combined as follows to compute the annual FHP requirement for each type aircraft:

$$\frac{\text{FL-ACFT}}{24} \times \frac{\text{CSR}}{1.25} = \frac{\text{Crews}}{30} \times \frac{\text{PMR Hrs}}{23} \times \frac{\text{Months}}{12} = \frac{\text{Annual Requirements}}{8{,}280 \text{ hrs.}} \quad [22]$$

The estimated annual flight hours for type aircraft is developed by the resource/program sponsor for aviation, Chief of Naval Operations CNO (OP-05) (OP-51C).

The two data elements, type aircraft annual flight hours and cost per hour, are inputed into the CNO OP-20 computer budget program which is a mathematical model that computes the total estimated AFM budget requirement. The OP-20 program determines the AFM budget requirements by multiplying the AFM cost per hour for a specific type aircraft times the annual flight hour estimate.

The individual computed AFM budget requirements for each type aircraft are totaled to develop the United States Navy's AFM budget request. NAVCOMPT (OP-92) consolidates the AFM budget element into the O&MN budget request and submits the budget package to OSD for review and approval. [19]

E. AFM VARIANCE REVIEW

Concurrent with the Type Commanders NAVCOMPT budget call request development is the six month budget execution variance review. This review is required by NAVCOMPT (OP-92) for all AFM variances in excess of 10% from the expected or budgeted

AFM cost per hour.

The Type Commanders must review excess variances and justify the causes. The key to a successful variance review is predicting the future and adjusting AFM budget funding requirements to correspond with new or abnormal trends in maintenance costs.

The variance review is performed for each type aircraft AFM cost per hour that differs by more than 10%. For example, if AFM execution data indicates F-14, F-4N and S-3A type aircraft reported maintenance costs varied from the expected norm or obligation rate by more than 10%, a variance review is necessary.

The Type Commanders attempt to determine the causes of the variances and project the future AFM costs. The AFM projection includes an adjustment to the budgeted AFM costs for the remainder of the fiscal year.

The adjustment attempts to pro rate costs such that the budget execution for the remainder of the fiscal year will cause neither a significant over-obligation nor under-obligation of authorized funding. [20]

F. SUMMARY

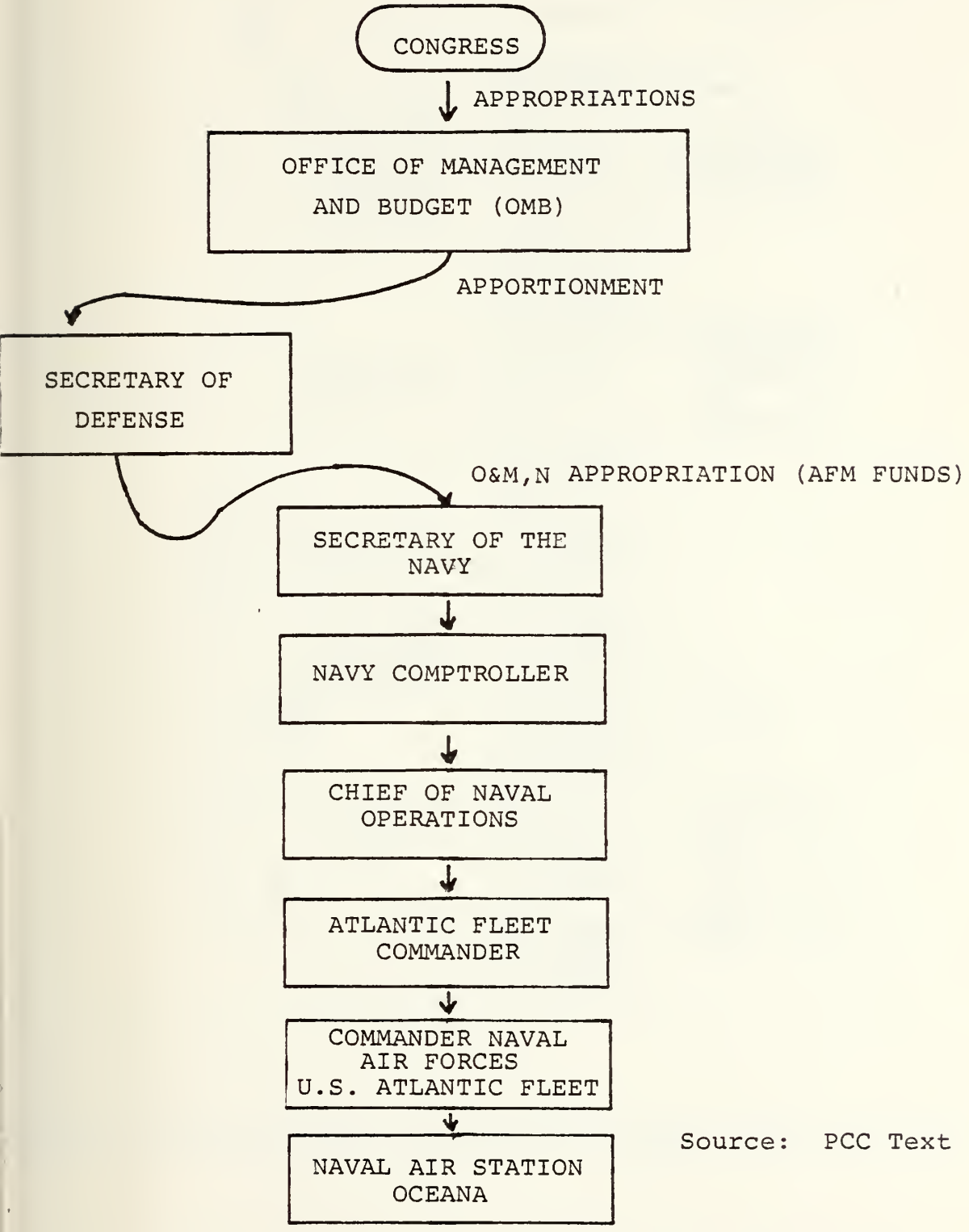
Exhibit 6 summarizes the AFM budget cycle process. The overall accuracy of the computed AFM budget request is dependent upon several factors, including: the PMR, CSR, the maintenance cost data base collection system and the number of type aircraft in the inventory. Errors or inaccuracies in any of the factors may cause the total AFM budget request to be

significantly under/over estimated. For example, late decisions made for aircraft procurement affects the type aircraft multiplier. This problem occurs because aircraft procurement is predicted based on existing and proposed programs which will not have final decision approval/disapproval until Congress acts on appropriation legislation during the budget review phase. Another problem is the correct identification of maintenance costs to type aircraft. Inconsistent cost data, classification and reporting may affect the weighted AFM maintenance cost per hour and in effect cause a serious funding shortfall or a significant funding excess.

NAVCOMPT and CNO (OP-05) recognize these possible problem areas and subject AFM budget requests to careful historical comparisons with past years budget requests to determine if significant errors do exist.

EXHIBIT 1

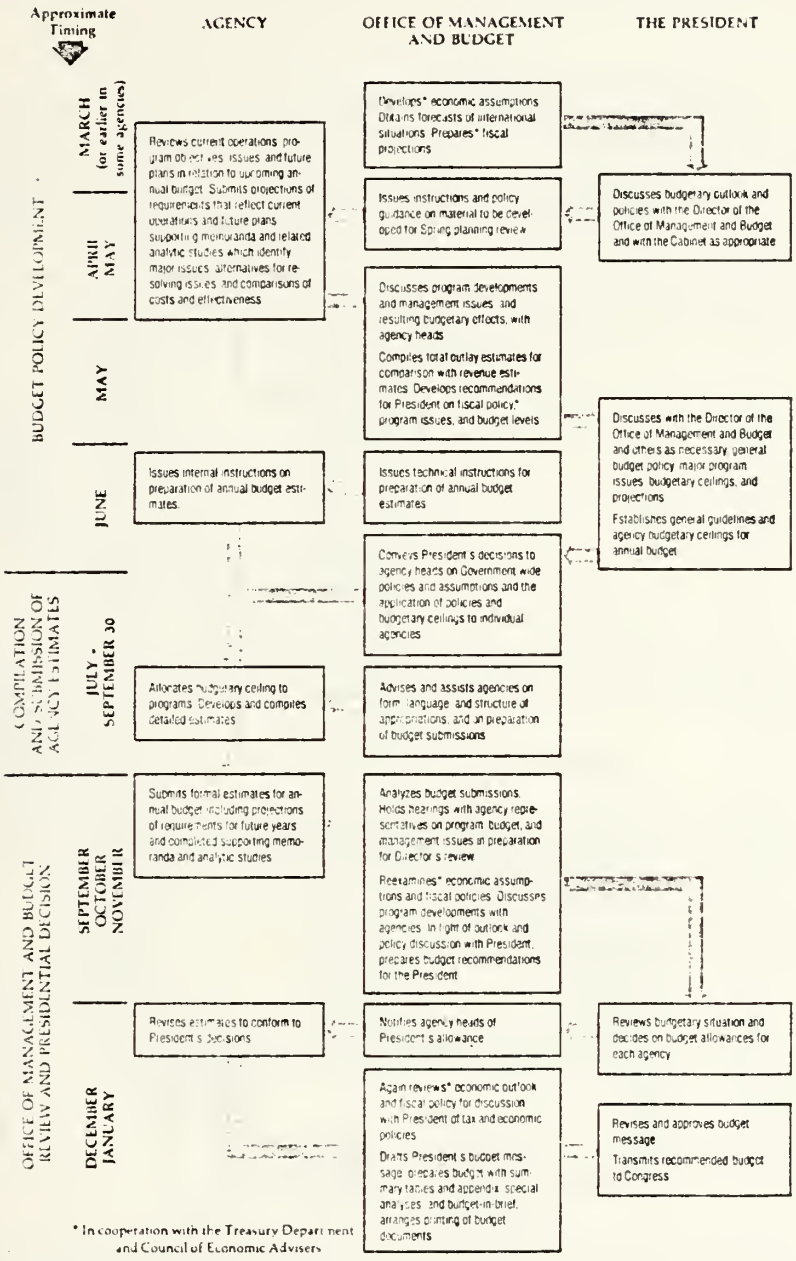
FUNDS FLOW OF NAVY APPROPRIATIONS



Source: PCC Text

EXHIBIT 2

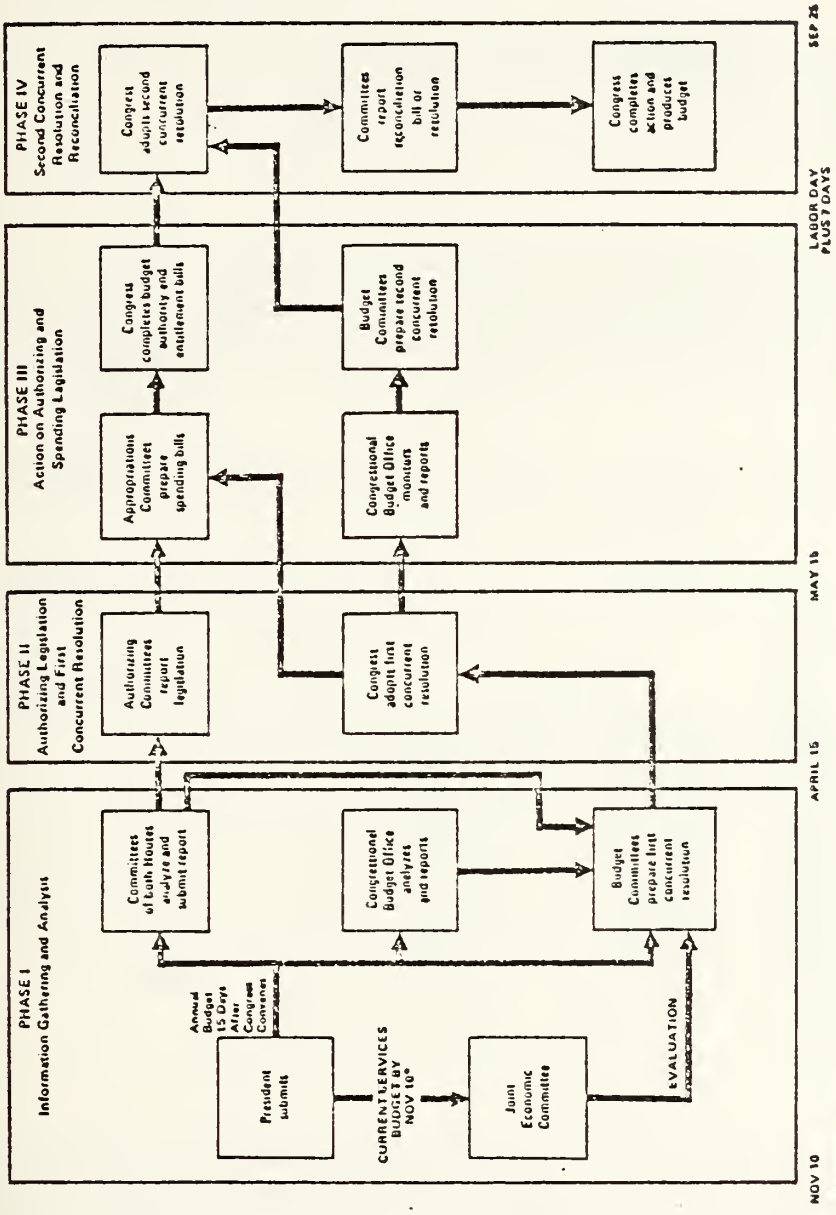
MAJOR STEPS IN THE BUDGET PROCESS


Approximate Timing
AGENCY
OFFICE OF MANAGEMENT AND BUDGET
THE PRESIDENT
BUDGET POLICY DEVELOPMENT
MARCH (for earlier in some agencies)
APRIL MAY
MAY
JUNE
COMPILATION AND SUBMISSION OF AGENCY ESTIMATES
JULY - SEPTEMBER 30
OFFICE OF MANAGEMENT AND BUDGET REVIEW AND PRESIDENTIAL DECISION
SEPTEMBER OCTOBER NOVEMBER
DECEMBER JANUARY
Reviews current operations, program objectives, issues, and future plans in relation to upcoming annual budget. Submits projections of requirements that reflect current operations and future plans supporting memoranda and related analytic studies which identify major issues, alternatives for resolving issues, and comparisons of costs and effectiveness
Develops* economic assumptions. Obtains forecasts of international situations. Prepares* fiscal projections
Issues instructions and policy guidance on material to be developed for Spring planning review
Discusses budgetary outlook and policies with the Director of the Office of Management and Budget and with the Cabinet as appropriate
Discusses program developments and management issues and resulting budgetary effects, with agency heads
Compiles total outlay estimates for comparison with revenue estimates. Develops recommendations for President on fiscal policy,* program issues, and budget levels
Discusses with the Director of the Office of Management and Budget and others as necessary, general budget policy, major program issues, budgetary ceilings, and projections
Establishes general guidelines and agency budgetary ceilings for annual budget
Issues internal instructions on preparation of annual budget estimates
Issues technical instructions for preparation of annual budget estimates
Conveys President's decisions to agency heads on Government-wide policies and assumptions and the application of policies and budgetary ceilings to individual agencies
Allocates budgetary ceiling to programs. Develops and compiles detailed estimates
Advises and assists agencies on form, language, and structure of appropriations, and on preparation of budget submissions
Submits formal estimates for annual budget including projections of requirements for future years and completed supporting memoranda and analytic studies
Analyzes budget submissions. Holds hearings with agency representatives on program, budget, and management issues in preparation for Director's review
Reexamines* economic assumptions and fiscal policies. Discusses program developments with agencies in light of outlook and policy discussion with President, prepares budget recommendations for the President
Reviews estimates to conform to President's decisions
Notifies agency heads of President's allowance
Reviews budgetary situation and decides on budget allowances for each agency
Again reviews* economic outlook and fiscal policy for discussion with President of tax and economic policies
Drafts President's budget message, prepares budget with summary tables and appendix, special analyses, and budget-in-brief, arranges printing of budget documents
Revises and approves budget message
Transmits recommended budget to Congress
* In cooperation with the Treasury Department and Council of Economic Advisers

ource: OMB Major Steps in the Budget Process (Washington DC)

EXHIBIT 3

CONGRESSIONAL BUDGET PROCESS DEPICTING MAJOR EVENTS THAT OCCUR DURING CONGRESSIONAL REVIEW OF FEDERAL BUDGET


PHASE I
Information Gathering and Analysis
President submits
Annual Budget 15 Days After Congress Convenes
CURRENT SERVICES BUDGET BY NOV 10*
Joint Economic Committee
EVALUATION
Committees of both Houses analyze and submit report
Congressional Budget Office analyzes and reports
Budget Committees prepare first concurrent resolution
NOV 10
PHASE II
Authorizing Legislation and First Concurrent Resolution
Authorizing Committees report legislation
Congress adopts first concurrent resolution
APRIL 15
PHASE III
Action on Authorizing and Spending Legislation
Appropriations Committees prepare spending bills
Congress completes budget authority and entitlement bills
Congressional Budget Office monitors and reports
Budget Committees prepare second concurrent resolution
MAY 15
PHASE IV
Second Concurrent Resolution and Reconciliation
Congress adopts second concurrent resolution
Committees report reconciliation bill or resolution
Congress completes action and produces budget
LABOR DAY PLUS 7 DAYS
SEP 25

*For FY 1979 and FY 1980, submitted concurrently with the annual budget.

Source: Adapted from Figure 1, *GAO Report to Congress*, OPA 76-29, April 21, 1976.

EXHIBIT 4

DECISION PACKAGE SET	NUMBER 613
SUBJECT Administrative Travel	OSD COMPONENT ALL

DESCRIPTION Covers administrative travel for all components, for all appropriations in accordance with OMB Bulletin Number 78-18.

RESOURCE REQUIREMENTS:

	TOA, $ in Millions						
		FY 1980					
	FY 1979	Minimum	Band 1	Band 2	Band 3	Band 4	Band 5
Service Estimate	118.8	118.8	-	-	-	-	-
Alternative Estimate	95.0	95.0	-	-	-	-	-

EVALUATION: The President has directed a reduction in administrative travel of 20% below the amount estimated in the FY 1979 budget transmitted to the Congress. The Alternative reduces administrative travel in FY 1979 and will be reflected as an offset to the proposed FY 1979 Pay Supplemental request. The Alternative straight lines the FY 1979 reduction to FY 1980 and assumes the same travel savings can be achieved in FY 1980.

ALTERNATIVE ESTIMATE: Reduces administrative travel by 20% in both FY 1979 and FY 1980.

OUTYEAR IMPACT: See Detail of Evaluation.

ALTERNATIVE ESTIMATE:

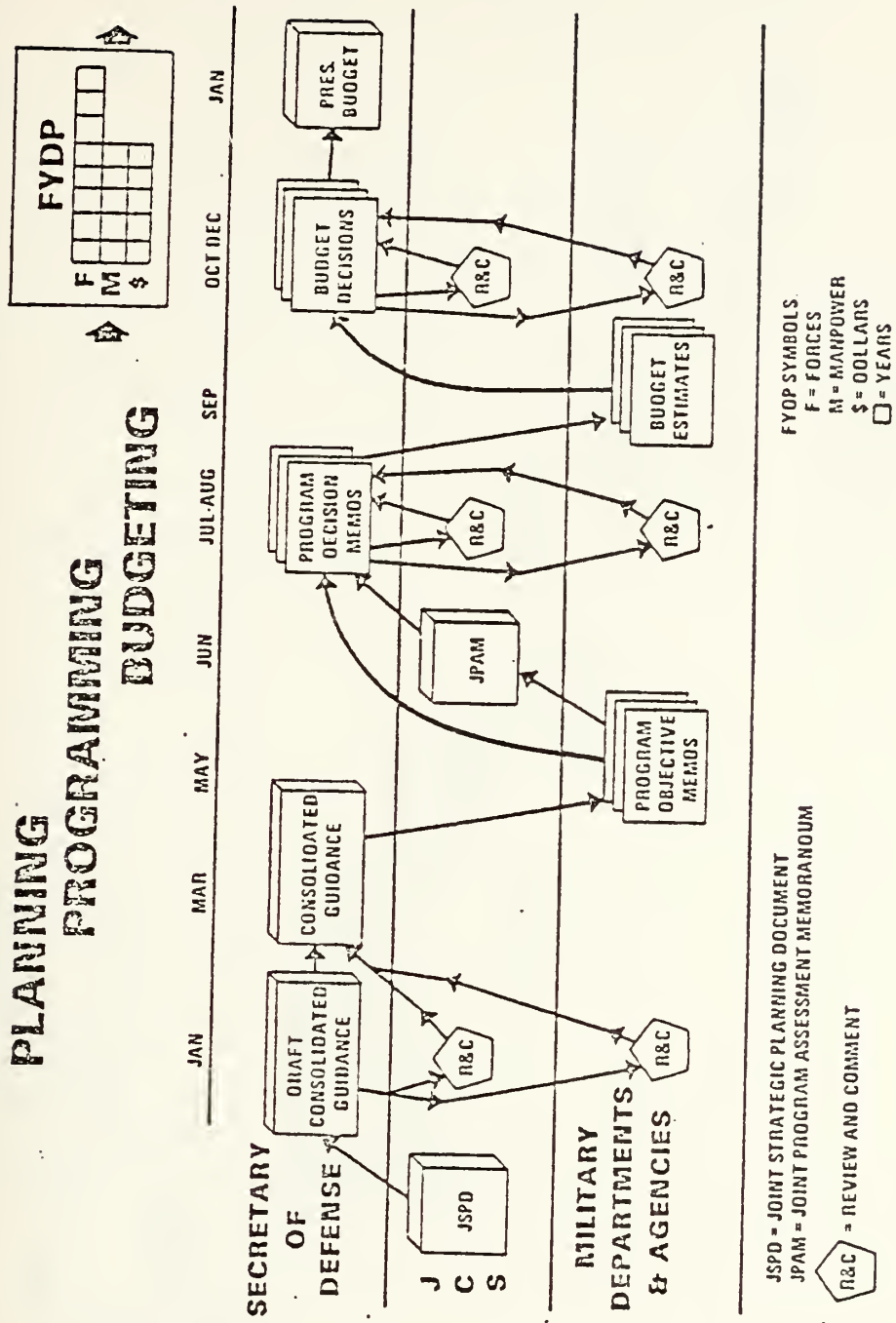
	($ in Millions)		
	Administrative Travel	FY 1979 20% Reduction	FY 1980 20% Reduction
Army	35.0	-7.0	-7.0
Navy	29.5	-5.9	-5.9
Marine Corps	3.9	-.8	-.8
Air Force	45.2	-9.1	-9.1
Defense Agencies	5.2	-1.0	-1.0
Total	118.8	-23.8	-23.8

DECISION
The Deputy Secretary approved the Alternative Estimate. Nov. 30, 1978

SD FORM 1 OCT 74 428-1

FOR OFFICIAL USE ONLY

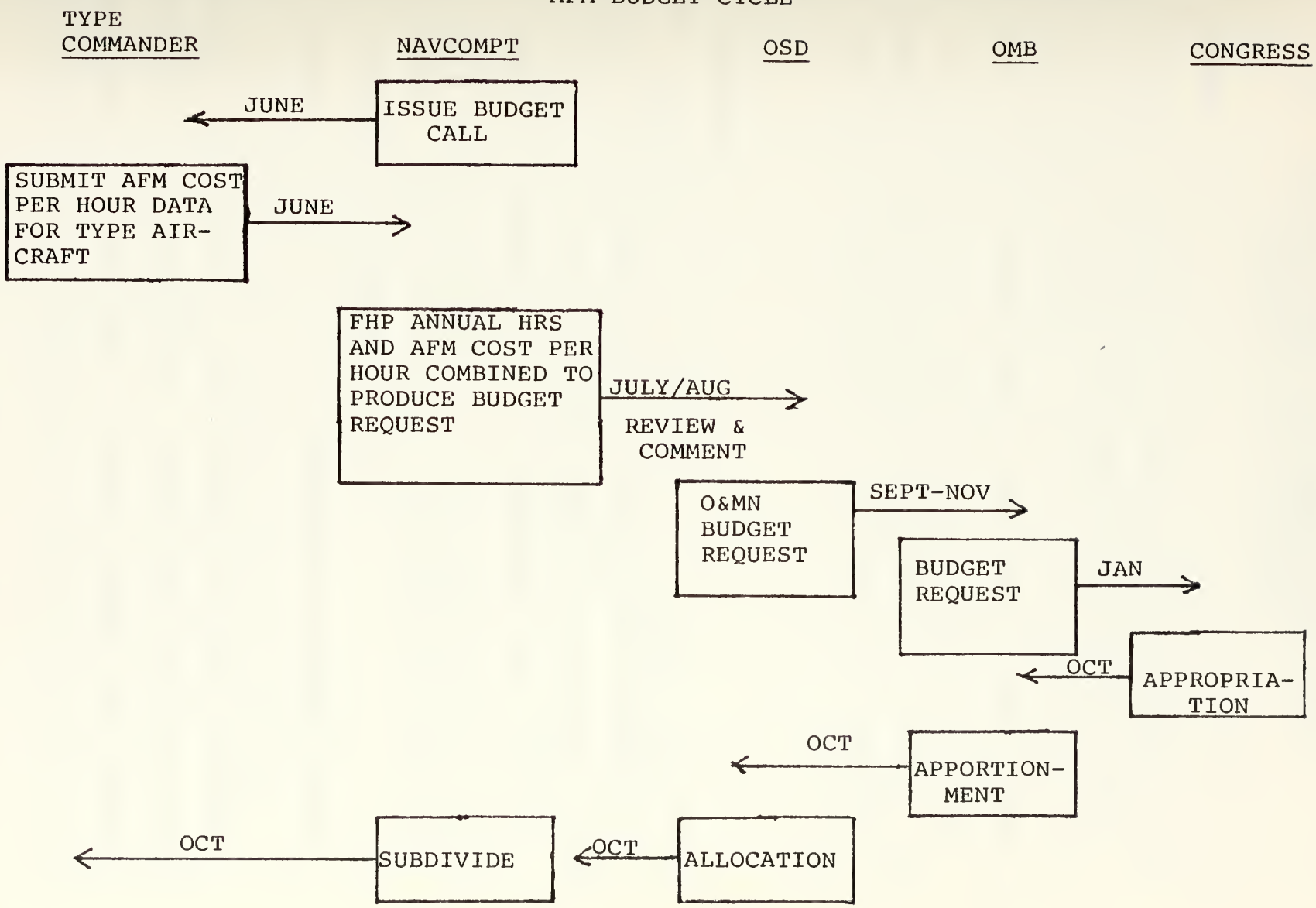
EXHIBIT 5



Source: Practical Comptrollership Course Student Text (NPS)

EXHIBIT 6

AFM BUDGET CYCLE



IV. AVIATION FLEET MAINTENANCE (AFM) FUNDS: OBLIGATION RATE MANAGEMENT

A. GENERAL

AFM Budget execution is the obligation or spending of the funds to accomplish effectively and efficiently the Congressionally approved programs. In general, the Commanders, Naval Air Forces, United States Atlantic and Pacific Fleets (CNAL and CNAP) allocate AFM funds to the Naval Air Stations (NAS) for the purpose of funding the aircraft maintenance function. The AFM funds grant is administered at the NAS by the Comptroller. [25]

B. COMPTROLLER

The Comptroller is the NAS financial manager. The primary function of the Comptroller is to provide the Commanding Officer (CO) with accurate data for effective management control. The Comptroller manages a staff organization that provides financial technical guidance, financial administration, budget formulation, execution and review, accounting and data collection and program performance review.

Internally at each NAS, the Comptroller accepts the AFM funds grant from the Type Commander, allocates the funds internally for support of the aircraft maintenance program, manages the accounting system, collects the cost data, reviews performance and reports legal financial status. The Comptroller's primary tool for managing AFM funds is the United States

Navy Resource Management System (RMS). [17 p.D31-34]

C. RMS

RMS is a financial control system designed to report, how, what, when, where and why funds are spent. The basic building block for properly accounting for expenses under RMS is the job order number structure.

1. Job Order Structure

The Navy job order structure is divided into the following eight sections: budget classification code; functional category; subfunctional category; cost account; expense elements; job order serial number; fiscal year; and local management codes. [17] The following is a brief description of the eight segments of the job order structure:

	Segment	Description
a.	Budget Classification Code (BCC)	Identifies how funds are used
b.	Functional Category (FC)	Identifies why funds are used
c.	Subfunctional Category (SFC)	A more detailed identification why funds are used
d.	Cost Account Code (CAC)	Identifies where funds are used
e.	Expense Element (EE)	Identifies what funds are used
f.	Fiscal Year (FY)	Identifies Fiscal Year
g.	Job Order Serial Number (JO)	Identifies local command Ordering department
h.	Local Management Codes (LMC)	Local use by Comptroller

An example of a job order code is shown in Figure 4.1.

In summary, the purpose of the job order structure as a cost accounting system is to (a) report the purpose of the funds, (b) provide detail costs, (c) provide statistical data to Congress, (d) collect cost information for budget estimates, and (e) allow comparisons between activities. [26]

Source: NAVCOMPT Manual Vol II, Chapter 4

Figure 4.1

RMS Job Order

(1)	(2)	(3)	(4)	(5)	(6)
BCC	FC	SFC	CAC	EE	FY
BB	F	F1	AHG1	T	Ø

(7)	(8)
JO	LMC

The job order is for the maintenance repair for a jet fighter arresting gear. Explanation of codes:

a. BCC: BB - Aviation Maintenance, cost of material, and labor at Organizational and Intermediate Level

b. FC: F - Maintenance

c. SFC: F1 - Operation of Aircraft

d. CAC: AHG1 - F-14s jet fighter

e. EE: T - Supplies repair parts

f. FY: 0 - Fiscal Year 1980

g. JO: - Local Comptroller use

h. LMC: - Local Comptroller use

2. Financial Accounting

Since each activity in the Navy is unique in its mission, location and management, job order coding is the responsibility of the Comptroller. The Comptroller establishes the job order structure at the beginning of each fiscal year with the Authorized Accounting Activity (AAA). AAA performs the cost accumulation accounting for the Comptroller's command.

The AAA prepares monthly financial reports for the Comptroller, providing the status of funds. Additional functions of the AAA includes providing the Comptroller listings of paid bills, financial reports and listings of non-received material orders. The Comptroller must establish a good working relationship with the AAA, reconciling records frequently, researching discrepancies and correcting errors. The link that connects the Comptroller and the AAA is the requisitioning process. For the purpose of simplification, a Naval Air Station's requisitioning process is presented for illustration in Exhibit 8. [17]

D. AFM REQUISITIONING PROCESS

The Type Commanders, CNAL and CNAP, grant AFM funds to the NASs for aircraft squadron maintenance purposes. The United States Navy aircraft are either land-based or aircraft carrier deployable. Permanent land based aircraft are generally the larger multi prop-jet engine transports, anti-submarine aircraft and station utility aircraft. Carrier

deployable aircraft are, in general, smaller, and mission oriented single and multi prop-jet engine. When a carrier designated aircraft squadron is not aboard one of the 13 aircraft carriers, it is assigned as a tenant to a NAS.

In general, aircraft squadrons are assigned to a specific NAS in groups of two or more squadrons for ease in facilities support. Industrial economies of scale make it more cost effective for the necessary support functions if similar type aircraft, i.e., similar squadrons, are assigned to the same air station. This assignment philosophy reduces Navy wide multiple support functions, centralizes the ashore maintenance functions, allows a smaller investment in peculiar aircraft ground support equipment, centralizes the material-inventory support functions, and increases facility utilization. Additional benefits accrue from the coordination and training continuity that is created by the continuous requirement to support similar aircraft. For example, a NAS may have four squadrons of F-14 jet fighters permanently assigned but in actuality have only two squadrons aboard while the other two squadrons are assigned to carrier duty. The continuous rotation from land to sea to land limits the total number of squadrons assigned as tenants but provides continuity of service. A distinct East-West coast division between NAS exists. With CNAL and CNAP grouping aircraft squadrons to specific NASs.

1. Organizational and Intermediate Maintenance

Within the NAS organizational structure are two departments providing primary functional support to the aircraft squadrons, the Supply and Aviation Intermediate Maintenance Departments (AIMD). In general, the Supply Department provides the material and the AIMD performs the intermediate maintenance.

Three distinct levels of maintenance, organizational, intermediate and depot, are performed on every aircraft during its life cycle. Briefly, organizational maintenance is performed by each squadron on their aircraft and normally is limited to refueling, minor repairs, failed component replacement and salt-rust corrosion control. The NAS's AIMD performs the intermediate maintenance function which includes more complex and comprehensive repairs, corrosion control and failed component replacement/repair. Depot level maintenance is a thorough overhaul, rework, and airframe modification of an entire aircraft. Performed at industrial activities such as the Naval Air Rework Facility (NARF), North Island, California, depot level maintenance involves several months of production repair using a highly technical and skilled labor force. The primary determination of when, where and why maintenance is performed is dependent on cumulative flying hours, aircraft age and aircraft flying readiness status.

The analogy of automobile maintenance presents a good comparison to the three levels of aircraft maintenance. Organizational maintenance if performed by the owner-gasoline

fillups, checking the engine oil and radiator coolant, and tire air pressure. Service stations perform the intermediate function-changing the engine oil, lubrication of the chassis and tire replacement. The automobile dealership performs the depot function-major engine repairs and body repairs.

2. Supply

The AIMD and squadrons purchase the necessary materials and supplies to perform required aircraft maintenance from the Supply Department. The maintenance activities fund the purchases from AFM funds citing job order numbers furnished by the Comptroller. If the material is unavailable locally from the Supply Department, the requirement is submitted to an external military or commercial supply source.

A simplistic flow chart diagramming the paperwork flow and funds transfer is presented in Exhibit 7. The following brief explanation describes the six steps presented in Exhibit 7.

a. NAS Supply Department submits AFM funded requisition to external military/commercial supplier

b. NAS Supply Department submits AFM financial obligation-undelivered order to the AAA

c. Military/commercial supplier ships material to NAS, NAS completes material requirement

d. Military/commercial supplier submits billing to the AAA

e. AAA matches air station undelivered order to supplier's billing-pays supplier monies due

f. Completes transaction and forwards completed filled order notification to NAS, NAS completes financial requirement

The requisiton-financial cycle works when the required material is readily available for shipment to the air station. Realistically, 20% to 40% of the material requirements are not available for immediate shipment within seven days. The unavailability of the AFM material creates an aged (back-ordered) undelivered order which is an outstanding obligation for material that has not been received. It is not uncommon for selected suppliers to be unable to immediately furnish the requested material because of leadtime production schedules, competing demands, and/or insufficient technical information. [24]

E. MAINTENANCE DELAYS

An assumption of Aircraft Maintenance is that delays in satisfying material requirements postpone the completion of maintenance and delay the aircraft's return to full flying readiness status. The critical necessity to maintain an aircraft squadron in a high readiness status generates enormous pressures within the responsible support groups for expeditious problem solving. Each of the participants, including the Supply and AIMD Departments, the parent aircraft squadron, the Air Wing Commander, and CNAL or CNAP (as appropriate) Supply and Material Readiness divisions, actively search for ways and means to reduce the maintenance delays caused by the nonavailability of demanded items. The various methods for solving a material work stopage include: local industrial manufacturing; cannibalization from another aircraft or aircraft assembly/

component which is the procedure of removing a working part from one aircraft and installing the part in the aircraft undergoing maintenance; and submission of new requisitions to multiple sources.

Unfortunately, the successful solution of a current work stopage or elimination of a potential maintenance delay is overshadowed by the repetitive demand to solve the next critical delay. An endless queue of material maintenance problems exist. When one is solved, the focus is immediately shifted to the next priority. Although this particular form of management by exception works, the price paid as a trade-off is the lack of attention to the undelivered order file. If a material requirement is satisfied by means other than receipt of the original requisitions, it is unusual for an activity to cancel the original requisition.

The following reasons are given as excuses for not initiating cancellation action:

1. No time to deal with past problems, the current problems demand all the available time
2. The material can be used as preventive stocking in case the problem occurs again
3. Unaware of established procedures
4. Unaware the problem was solved.

Established procedures require the cancellation of outstanding AFM requisitions that have been satisfied from other sources. Although diverting incoming AFM material to insurance

stocks appears to be a sound management decision, the supply system is based on priorities and mission commitments. Stocking material for future demands at one activity without authorization may delay the maintenance efforts at another activity. Insurance stock levels should be mathematically determined based on historical demand, material availability, endurance requirements, costs and maintenance capability, and not a haphazard decision choice. To assist the NAS in managing the undelivered orders, a Material Obligation Validation (MOV) Program is performed quarterly.

F. MOV

The MOV program is designed for improving the undelivered order file validity through the mandatory quarterly review of all undelivered orders. The objective of the MOV program is to identify those undelivered orders that are still required for aircraft maintenance and then those undelivered orders that are no longer required.

CNAL's and CNAP's staffs have indicated that the successful execution of the MOV program within the United States Navy should be the key management tool for effective AFM management. In recent years, the United States Navy has criticized the NASs for the unsatisfactory review management of undelivered order files. In particular, Naval Audit Service audits and Fleet Type Commander Supply and Material Readiness Inspections have repetitively noted a lack of either a viable or effective undelivered order review process. [7] Formal findings have

stated that a significant percentage of naval units' undelivered AFM orders that are listed on AAA financial and inventory records are no longer required. As a consequence, the penalty for the failure of the United States Navy to effectively recognize and purge unnecessary undelivered orders from active files has been funding reductions levied during the budget cycle.

To offset the funds tied up by unnecessary undelivered orders, the Fiscal Year 1976, O&MN budget request was reduced by budget reviewers of the Office of the Secretary of Defense (OSD). The OSD justified the funding reduction by projecting the realizable potential savings that was available from canceling unnecessary undelivered orders. [6] The cancellation process results in a deobligation of committed funding and a recreation or increase in available obligational authority. The OSD's philosophy was to provide a natural incentive for an improvement in the outstanding requisition file review process. Through budget reductions, the United States Navy would be forced to recognize the advantage of identifying and eliminating unnecessary undelivered orders. Ultimately, the effectiveness of obligational authority would improve and the creditability of budget requests would increase.

F. SUMMARY

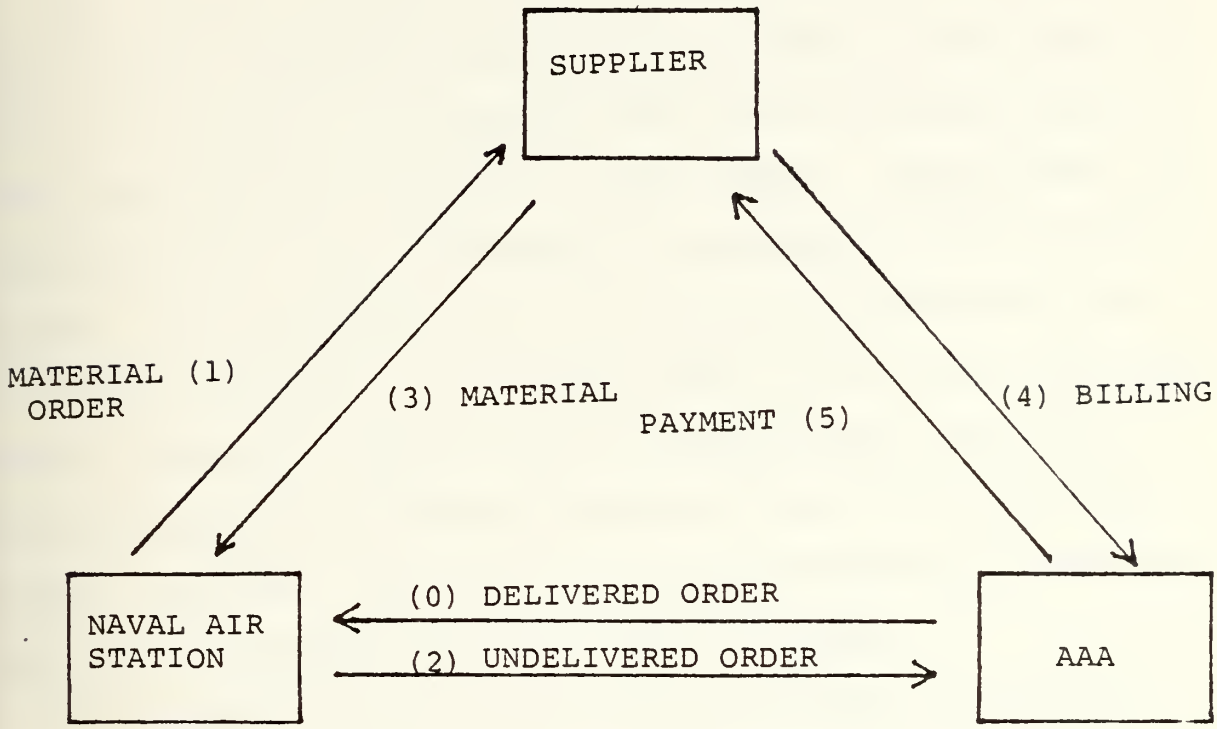
The Comptroller is the designated financial specialist providing the Commanding Officer advice, maintaining the funds status and supervising the cost accounting collection and

performance review. The job order structure is the foundation of the financial control system. Listings prepared by the AAA report the financial transactions conducted by an activity.

One specific problem noted by CNAL's and CNAP's staffs is the lack of attention to the undelivered order files. The ineffectiveness of internal management controls, communications and procedural misunderstandings creates unnecessary undelivered orders. The pressures of budget reductions, external audits and inspections and external monitoring are deterrents; but, for the United States Navy to make significant improvements in undelivered order file validity, internal management must focus attention, controls and manpower to the task.

EXHIBIT 7

REQUISITION CYCLE



Source: NAVSUP Vol II, Supply Ashore.

V. TYPE COMMANDER (TYCOM) SURVEY

A. GENERAL

This chapter presents data collected during interviews with various personnel attached to the staffs of the Commander Naval Air Forces U. S. Atlantic Fleet (CNAL) and the Commander Naval Air Forces U. S. Pacific Fleet (CNAP). These staffs are responsible for the administrative management aspects, such as funding, for the majority of the operational aircraft in the U. S. Navy inventory. All of the Naval Air Stations (NAS) surveyed in Chapter VI derive their organizational and intermediate maintenance funding from one of these two Type Commanders (TYCOMS). Also, all of the NAS surveyed are under the direct line authority of one of the two TYCOMS.

The chapter is divided into three sections. The first section or Introduction, includes information on the organization of the chapter, information on the construction and execution of the survey, and other general background material. The second section, Survey Results, is further divided into five subsections: General Background, Internal Performance Measurement, Internal Management Control, Type/Fleet Commander Interface, and Aviation Fleet Maintenance (AFM) Problems. The final section provides a summary of the information presented in the chapter.

The questions used in the TYCOM survey were adapted from those used in the NAS survey. The survey contains a total of

34 questions, and is presented as Exhibit 8.

The survey was conducted over a period of several weeks via a number of telephone conversations between the authors and various members of the TYCOM staffs. The predominant input was generated from the Comptroller (Resource Management) sections of the Staffs. Some information was also gathered from the Readiness section of the CNAL staff. The authors did not interview either of the TYCOM staff Comptrollers but instead focused on the more specialized levels within the organizations that dealt directly and on a daily basis with AFM funding and the flying hours program. Individual references are not made in the chapter, rather the essence of the interviews is provided.

B. SURVEY RESULTS

This section discusses the results of the survey conducted with the TYCOM staffs. As previously noted, the section is divided into five subsections conforming to the organizational structure of the survey.

1. General Background

Both TYCOMs have directives or instructions that address financial management. Also, both have more detailed material specifically addressing the management of AFM. CNAP does so in a section of the general financial management instruction CNAPINST 7303.11F. This instruction is dated

29 September 1976 and is scheduled for rewrite in 1980-1981. The section concerning AFM management is shown as Appendix C. CNAL has recently published an instruction solely devoted to AFM management. A copy is presented as Appendix D.

Both CNAL and CNAP place considerable emphasis on delineating the types of services and material that are properly chargeable to AFM and conversely types of material and services for which AFM funding would be inappropriate. Also both activities include instructions for the submission of periodic accounting reports. CNAP provides reporting instructions in another section of the general financial management instruction. CNAL includes that information in their AFM instruction. Neither activity includes guidance on approved or suggested techniques tu suballocate funds within subordinate activities. Also, neither activity provides information on performance standards or on the performance evaluation techniques that are used by the TYCOMs in judging the subordinate activity's use of the AFM funds given to it by the TYCOM.

Both activities have formal systems to distribute funds to subordinate activities. The TYCOMs use an official form (NC 140) which in essence provides the subordinate activity with a funding limit that carries with it legal responsibility if the limit is exceeded. That responsibility is delineated in section 3679 of the revised statutes of Title 31, United States Code (USC) 665. CNAP distributes funds on a quarterly basis. CNAL distributes funds also on a quarterly basis but,

segregates the quarter into months and mandates spending limits for each month. Neither activity solicits AFM budget inputs from subordinate activities, other than the required periodic accounting reports. Both activities submit budget input to the next higher level in the chain of command, the Fleet Commanders, i.e., Commander United States Pacific Fleet and Commander United States Atlantic Fleet. The input is based primarily on historical data obtained from the periodic accounting reports. The input data are adjusted for program changes such as changes in the types of aircraft in the particular fleet.

2. Internal Performance Measurement

Both activities measure performance on the basis of; obligation rate over time, cost per aircraft per year, and cost per flying hour. Neither activity conveys any assessment of performance to the subordinate activity (NAS) unless the subordinate activity's performance is very poor. Neither TYCOM sets specific performance standards per se, although both consider obligation rate and cost per aircraft to be good indicators of actual performance. Performance was judged by comparing actual rates as reported on the accounting reports with historical rates and with budgeted rates. When performance varies significantly from the projected figures CNAL readiness personnel perform the initial investigation. If the situation remains unresolved comptroller personnel become involved. At CNAP the investigation is performed

entirely by comptroller personnel. Notably, neither TYCOM uses AFM performance as an input to the subordinate activity (NAS) commander's personal performance evaluation (FITREP).

Both TYCOMS considered "readiness" or "airplanes that fly" as the output generated from the AFM resource. Neither had any formal means to tie that output to the dollar input. Neither had any formal means to measure the efficiency or the effectiveness of the maintenance function as related to AFM usage. Several measures of aircraft readiness and squadron readiness exist, and detailed procedures are in effect that require readiness reporting to the TYCOM on a daily basis. However, aircraft readiness is a function of several variables and it was the opinion of the TYCOM personnel that a simple comparison of the readiness figures currently available with the AFM usage rates would not provide a reliable measure of efficiency or economy.

3. Internal Management Control

Both TYCOMs use historical cost data coupled with a projection of base loading to distribute AFM funds to subordinate activities. Although this method is considered to be relatively accurate when used in aggregate, it carries the assumptions that the historical costs are applicable to the future and that the variance in the cost per flying hour is minimal.

Both activities emphasize the use of requisition validation to assist in recouping dollars in a funds shortage

situation. Requisition validation is also called material obligation validation (MOV) and was described in chapter IV. If the funds granted to the TYCOM are insufficient to meet the requirements of the subordinate activities, the TYCOMs spread the funds shortfall on a pro rata basis over all of the activities requesting funds. Allowances are made for special requirements and program changes at certain stations.

Neither TYCOM uses its internal review section to examine items in the AFM management area. Both consider that AFM receives coverage at the subordinate activities during the mandated annual supply inspections. CNAL provides an inspector from the readiness section to the inspection team to specifically review AFM management at the NAS's.

Both TYCOMs require that MOV's be conducted by the NAS's on a quarterly basis. This is in accordance with the overall supply system directives.

4. Type/Fleet Commander Interface

Both TYCOMs thought that the Fleet Commander's evaluated TYCOM performance relative to AFM was based on conformance with the total budget and the projected cost per flying hour. Because of variations in the execution of the flying hours program, (FHP) CNAL thought that the "bottom line" for their performance was overall budgeted versus actual obligations.

Both TYCOMs submit summary Flying Hour Cost Reports (FHCR) to the Fleet Commanders on a monthly basis. These reports are stratified by program within the Five Year Defense Plan.

Since AFM funding is governed by the Flying Hours Program (FHP), adjustments to AFM dollars granted at the TYCOM level can only be made during the semiannual pricing reviews. An explanation of the FHP is provided in chapter three. In the interim periods the TYCOMs are constrained to live within the budget granted at the beginning of the fiscal year.

Both TYCOMs spoke with their Fleet Commander counterparts about the FHP and AFM on a regular basis. Also CNAP spoke with NAVCOMPT personnel on occasion though the CNAP personnel were careful to point out that the discussions were purely informational and that the chain of command through the Fleet Commanders was strictly followed.

5. AFM Problems

Both TYCOMs considered the Budget Optar Reports (BOR) and the Flying Hour Cost Reports (FHCR) to be the most crucial information sources in the AFM data collection system. These reports are submitted each month to the TYCOMs by the subordinate activities with AFM funds. Neither TYCOM mentioned the use of the readiness reports for AFM management. Both considered that AFM was manageable in a fiduciary sense.

Incentives to reduce AFM obligations included additional emphasis on MOV and additional management scrutiny of supplemental funding requests from the NAS's. Neither TYCOM had any plans to further enhance efficiency mainly because of the inherent difficulties in measuring AFM efficiency.

In addressing the current problems faced by the TYCOMs in managing AFM, CNAL indicated that the people problems, such as turnover and training, at the NAS level were the primary source of management difficulty. Also, CNAL indicated that historically AFM funding had been relatively generously provided and controls had been loose when compared to other funds. This had contributed to an attitude by the users of the AFM dollars that the AFM reservoir was essentially limitless. Such attitudes are antithetical to efficiency and economy. Recent changes in the funding climate at CNAL had emphasized the limitations of the AFM funds pool. CNAL thought that the attitudes at the NAS working level were changing and that AFM was receiving additional management attention.

CNAP indicated that a principal problem was the inability to measure performance of the AFM obligations in relation to the actual output of aircraft readiness. As a result, fiduciary surrogate measures are used and those surrogate goals had supplanted the actual goals of maximum readiness for minimum dollars. As a result attempts to economize had been met with disinterest or bewilderment.

Both TYCOMs indicated that improvements could be made by educating the AFM users to the fact that AFM was a limited resource. In addition, the TYCOMs indicated that the education should be backed up with some means to motivate users to spend funds economically. Options offered included; allocating responsibility for AFM funds to the unit level,

and granting fewer supplemental requests for funds.

Finally, both TYCOMs considered that significant savings would be attainable if additional management attention was focused on AFM.

C. SUMMARY

The TYCOM survey was conducted using questions adapted from the NAS survey. Personnel in the Comptroller divisions of CNAL and CNAP were interviewed to answer the survey questions.

Both TYCOMs have formal instructions for AFM management, but neither have performance standards that tie the output with resource utilization. Of the performance indicators noted, obligation rate and cost per flying hour are the most widely used. Performance standards and evaluations of performance relative to AFM are not conveyed to the subordinate units (NAS's) on a regular basis. Evaluations of performance are communicated to the NAS's only if performance is seriously deficient. AFM performance is not used as an input into the NAS's Commanding Officer's personal performance evaluation.

Both TYCOMs indicated that "readiness" was the output of the utilization of the AFM dollars. Neither had a method to measure that output against the AFM dollar input. Budgeting and funding were based on historical data.

The TYCOMs' internal review sections are not involved in evaluation of AFM management. However, AFM management is

covered at the NAS's during the annual supply inspections. CNAL provides an inspector to the inspection team to review AFM management. No regular review of AFM management by an outside source is conducted at the TYCOM level.

Both TYCOMs provide essentially the same accounting information and budget information to the Fleet Commanders. Neither TYCOM solicits budget information input from the NAS's.

Both TYCOMs consider AFM manageable in a fiduciary sense. Both indicate that savings could be achieved with additional management attention. CNAL perceives the most serious problems to be people related (turnover, training) and motivational (perception of unlimited funds). CNAP perceives the most serious problem as the lack of a reliable performance measurement system.

EXHIBIT 8

TYPE COMMANDER SURVEY

A. GENERAL BACKGROUND

1. Does the activity have a financial management instruction?

2. Does the activity have an AFM financial management instruction?

3. Is there a formal system at the TYCOM to distribute AFM for the NAS's?

4. Are AFM funds distributed monthly/quarterly?

5. Does the TYCOM solicit budget inputs for AFM from the NAS's?

6. Does the TYCOM submit AFM budget requests to the Fleet Commander?

B. INTERNAL PERFORMANCE MEASUREMENT

7. How is performance relative to the AFM grant measured?

8. How is performance measurement communicated to the NAS's?

9. Are performance standards set and measured for AFM usage?

10. How often are performance and standards reviewed?

11. Is AFM performance an input to NAS Commanding Officers Fitness Reports?

12. Who conducts the performance and standards review?

13. If AFM is a resource, what is the output?

14. How is the output measured?

15. Is the output measureable against the AFM input?

16. Is there a method to measure the efficiency of AFM utilization?

17. Is there a method to measure the effectiveness of AFM utilization?

C. INTERNAL MANAGEMENT CONTROL

18. What criteria is used to distribute AFM funds to the NAS's?

19. What action is taken in the event of an AFM funds shortage?

20. Does the Internal Review section examine areas within AFM funds control?

21. How often are Material Obligation Validations (MOV) conducted?

D. TYPE/FLEET COMMANDER INTERFACE

22. What measurement does the Fleet Commander use to evaluate Type Commander AFM funds performance?

23. What financial data are submitted to the Fleet Commanders?

24. Is the AFM grant able to be adjusted during the year?

25. How often do you discuss AFM funding with the Fleet Commander?

E. AFM PROBLEMS

26. What do you consider to be the most important information available from the AFM data collection system?

27. Are AFM funds controllable at your activity?

28. Are there any incentives at your activity to reduce or lower AFM obligations?

29. What is your most significant problem area with AFM funds?

30. What can be done to improve AFM management at your activity?

31. Are cost savings available if AFM management attention is changed, increased, or decreased?

VI. NAVAL AIR STATION (NAS) SURVEY

A. GENERAL

This chapter presents information collected during the survey of NASs. It will be used as the basis for drawing conclusions and recommendations in Chapter VIII. This chapter is divided into three sections. The first section describes the techniques used in collecting the data and special problems that had to be resolved. The second section displays the collected data into various visual charts. The last section reports a summary of the NAS survey findings.

B. METHOD

The previous presentations on financial control systems models, Chapter II; the AFM budget environment, Chapter III; and the Aviation Fleet Maintenance Funds (AFM) obligation process, Chapter IV; were the basis for the NAS survey questions. The survey was designed in order to provide insight into the problems of managing AFM funds, evaluating performance and improving financial control. The survey emphasis was strictly from the viewpoint of the NAS AFM funds administrator.

The sample activities selected for this survey were limited to 16 NASs under the administrative command of the Commanders, Naval Air Forces, United States Atlantic and Pacific Fleets (CNAL and CNAP). The decision to use a judgemental sample was based on three factors. The first element involved

limiting the selection of activities to those that performed similar aviation maintenance programs. The second decision factor involved the selection of activities that were organized under similar lines of authority and responsibility. The final factor involved the selection of activities that were available for telephone interviews. Of the total 35 Naval activities performing aviation maintenance located throughout the world, 16 activities were considered accessible by telephone. The surveyed NASs are listed in Exhibit 9.

Two methods were chosen to conduct the survey. The first, a pretest survey, was a judgement and convenience sample. The purpose was to test the schedule of survey questions in order to determine if the questions were concise and clearly understood. The pretest survey also provided immediate feedback and reevaluation of the sample questions.

The pretest survey was conducted through actual on-site interviews. By selecting activities close to the Naval Postgraduate School, the expenditure of travel dollars was saved. Based on the information collected from the pretest survey, the original survey questions were modified slightly. Exhibit 10 presents the NAS survey questions.

The second survey method was to conduct the NAS survey by telephone. The decision was necessary because the activities selected were located throughout the United States. Since the data was collected from telephone interviews, it was necessary to phrase the survey questions in a manner that

solicited short and concise responses.

All 16 NASs were very helpful in providing responses for each question on the survey. A majority of the activities interviewed expressed interest in the final recommendations and conclusions developed from their inputs.

The primary point of contact within each activity was the Comptroller, the Deputy-Comptroller or in several instances, the Senior Budget Officer Analyst. To supplement the activities responses, follow-up interviews were conducted at specific activities with the Supply Officer and Internal Review/ Audit division head. A summary of the titles of the individuals interviewed is presented in Exhibit 11.

The individuals interviewed at the various activities were knowledgeable in both the general and specific areas of their activities financial control system and management control system. From the interviews, the key decision areas were determined.

C. DATA PRESENTATION

The results of the first ten questions of the survey are displayed in exhibits 12 through 24. The data is arranged to summarize the responses to the survey questions. Survey exhibit 12 is a breakdown of the sample field activities by East Coast and West Coast administrative assignment under the command of CNAL and CNAP. Exhibits 13 through 24 provided an overall summary of the responses to the first ten questions

of the survey, plus, a breakdown by east coast and west coast. Descriptive results of the remaining 32 questions are provided in the next section.

D. FINDINGS

Section D discusses the findings of the survey as related to the questions that were answered with short responses. The section is subdivided into five segments. The first subsection discusses performance measurement at the NAS. Subsection 2 outlines internal management controls and subsection 3 presents the NAS relationship with the Type Commander. Subsection 4 discusses the NAS AFM funds managers' perception for improving the AFM financial control and management control systems. The last subsection summarizes the findings.

1. Internal Performance Measurement

The measurement of internal performance as discussed within the context of control models in Chapter II stresses the importance of defining the output. The accumulated efforts of an organization should result in an output measurement evaluated with respect to resource effectiveness and efficiency.

Ten of the 16 activities stated that AFM funds performance was measured directly by computing the cumulative obligation rate. Three activities measured performance relative to aircraft readiness. One activity measured AFM funds performance through examining the AFM computed maintenance cost per hour for type aircraft. The 10 activities measuring

performance through obligation rate provided the cost centers with performance analysis data. The analysis method was similar among each activity with comparison shown between actual and established obligation rates. In general, the established obligation rate is a projection of a straight line obligation rate. For example, if the time period for funds obligation is 30 days, after 15 days, 50% of the funds would be expected to have been obligated. After 30 days, 100% obligation would be expected. AFM funds performance was measured by the deviation above or below the expected obligation rate. When significant differences between the expected and actual obligation rate occurred, the AFM funds managers requested that the cost centers provide explanations. Obligational analysis is performed monthly at all ten activities. The activities measuring AFM funds performance to aircraft readiness did not know how to measure whether readiness was sufficient other than by comparing aircraft readiness statistics to the Chief of Naval Operations (CNO) established goals. The one activity measuring AFM funds performance to the type aircraft maintenance cost per hour compared historical costing to the current recorded cost per hour. One activity did not believe that sufficient information was available to perform measurement analysis.

The unanimous activity response for the measurement of an AFM funds output is aircraft readiness. AFM funds as an input resource are used for aircraft maintenance repair. Two

monthly reports measure the AFM funds effectiveness, one report measures performance directly and the other report measures performance indirectly. The monthly Flying Hour Cost Report (FHCR) (Report Symbols OPNAV 7310.3A) is a direct measure of AFM funds obligation data. This report serves two functions. First, it provides the baseline cost information used by the Chief of Naval Operations (CNO) for AFM budget preparation and funds use review. Secondly, FCHR summary statistics are submitted to Congress in accordance with their requirement for information pertaining to budget execution.

The indirect performance measurement is the monthly Aircraft Statistical Report (ACR) that summarizes an activity's monthly flying hour program. The ACR does not report AFM funds data but does report the output result of aviation maintenance in terms of aircraft readiness. This report includes data on the number of aircraft assigned and the number of aircraft available for flight and mission performance. For example, an activity with ten F-14s assigned might report eight aircraft available for flight and six capable of performing the primary fighter mission.

The 16 activities believe that the AFM output is readiness; however, no activity is currently using a method to correlate the input to an output. A method to interrelate the FHCR and the ACR does not exist at the activity level.

Eleven of the 16 activities also associated AFM funds effectiveness to aircraft readiness. The remaining five

activities did not believe that effectiveness was measurable. Two activities stated that while it is possible to equate funds to a readiness output, it is not possible at the activity level to explain if high readiness or low readiness with respect to the CNO aircraft readiness goals is directly attributable to AFM funds.

The AFM budget cycle projects required AFM funding based on the maintenance cost per hour and the annual flying hours for type aircraft. The activities record the maintenance costs but are not able to record whether obligations are effective. One Comptroller stated that it is difficult to link readiness and obligations because no direct measurement exists correlating obligation rates and aircraft readiness statistics. AFM obligation rates are measurable, but determining if the AFM funds were well spent is not measurable. The 16 activities were unanimous that a method of measuring AFM funds efficiency does not exist at the activity level.

The authors believe that there is a probable link existing between AFM funds and readiness but during the transformation from funds to material to maintenance to flying, the activity cannot capture the measurement of effectiveness.

2. Internal Management Control

Five of the 16 activities distribute AFM funds to the cost centers based on the cost centers budget input requests. Nine activities distribute AFM funds to the cost centers based on historical data. Two activities manage centrally

the AFM funds. On the whole, Squadron Cost Centers performing organizational maintenance and AIMD Cost Centers performing intermediate maintenance are each allocated 45% of the AFM funds. The remaining 10% of the AFM funds is allocated to the Supply Department. They use the funds for providing inexpensive repair parts that are available without charge to AIMD for use during the maintenance phase.

All 16 activities employ similar procedures in the event of a shortage of AFM funds. If the activities actual daily obligation rate is projected to cause a funding shortfall, the first step taken by the 16 activities is to inform the Type Commander, requesting additional funding. Secondary procedures include initiating unscheduled Material Obligation Validations (MOV) and reducing, delaying or eliminating planned aircraft maintenance action.

All 16 activities provide the NAS Commanding Officer (CO) an AFM funds status summary. In general, each activity furnishes similar funds status information. Specific elements included in the CO financial brief are total AFM Grant, total obligation and expenditure amounts, obligation rates, available AFM balance, individual cost center comparisons and graphical data. The frequency for submitting financial information to the CO varies among the activities. The most common submission periods are weekly and monthly.

The 14 activities distributing AFM funds to cost centers provide each cost center with weekly financial reports.

The fund control report format is similar among the various activities. The reports are detail transaction listings identifying the period covered by the report, the job orders and document numbers processed, the quantity ordered, the date processed, the chargeable cost, the cumulative obligations and remaining balance. The weekly reports are submitted to either the cost center's division head or material officer. If the cost center is an aircraft squadron, the funds report is normally submitted to the squadron CO with a copy provided to the squadron's parent Air Wing.

The verification of the cost centers memorandum accounting records with the official NAS accounting records varies widely among the activities. Cost center memorandum records are used for recording the value of planning estimates, gross obligations incurred and the balance of funds available. Verifying memorandum accounting records with NAS accounting records is analogous to balancing a check book with the bank statement.

Three activities do not require NAS cost center record verification. One of these three activities does not require the cost centers to maintain memorandum accounting records. Specifically, without memorandum records, a record verification is impossible. Five activities conduct a record verification if the cost center requests. Periodic reconciliations occur at five activities with either weekly or monthly frequency. The Comptroller's accounting division assists the

cost centers with the verification. The most common problems discovered during verification are price adjustments and pipeline posting delays. Price adjustments are increases or decreases to the cost center's initial material obligation order. The lag from when the cost center initiates an obligation until the obligation appears on the RMS report is a pipeline delay. The average pipeline delay is a week; however, five activities report delays from fifteen to thirty days.

Internal Review Audits have become increasingly more important at the NAS. The United States Navy Internal Review emphasis was historically an examination of the non-appropriated functions such as welfare and recreation and the club system. New guidelines encourage total activity audits to include the appropriated functions such as AFM program support. [23]

Internal Review staffs at eight activities are currently conducting programs examining AFM obligation rates, pipeline delays, MOV, maintenance work stoppage and categories of material purchased. Four activities are dependent on the Naval Audit Service for audits of AFM funds control and management. The remaining activities have either annual AFM audits or are planning to conduct the first AFM examination within the next 12 months.

MOV is scheduled monthly and quarterly at all 16 activities. Monthly the priority AFM undelivered orders are validated and quarterly all other AFM undelivered orders

are validated. Additionally, tenant squadrons pre-deployment preparations include a comprehensive MOV review of all undelivered orders.

Financial edit at ten activities is divided between Supply and the Comptroller. The financial edit process is the validation of material requisitions for specific data elements including such items as customer number, material stock number, unit of issue, unit price and extended dollar value. Supply performs the financial edit on cost center requests for United States Navy stocked material and the Comptroller performs the financial edit on cost center requests for open market purchase of material. The Comptroller performs the total financial edit at two activities. Six activities do not require a preliminary financial edit prior to establishing the initial obligation in the RMS accounting network. The justification for not conducting a manual financial edit screen is that the edit process is performed by the computer based financial control system.

3. NAS/Type Commander Interface

Four activities believe that the Type Commander measures AFM funds performance relative to obligation rates. Two activities thought that the Flying Hour Cost Report (FHCR) is the key Type Commander measurement tool. Ten activities are not sure what measurement the Type Commander uses to evaluate NAS AFM funds performance.

The FHCR and RMS Reports NAVCOMPT 2168, 2169 and 2171 are submitted monthly by the activities to CNAL and CNAP. The RMS concept correlates the job order accounting system with the cost of the resource consumed for maintenance. This comprehensive base level job cost system collects the detail cost information. Recall that Chapter III presents a full description of RMS job order costing. In addition, the CNAL and CNAP Maintenance Data Collection (MDC) system provides statistical data through six separate but interrelated subsystems: Man-hour accounting (MHA); maintenance data reporting (MDR); aircraft statistical data (ASD); ground support equipment (GSE) statistical data reporting; and training device statistical data (TDSD) reporting. This system is designed to provide maintenance and material managers with data related to direct labor costs, material reliability and maintainability and technical and mission support. However, the MDC system lacks a comprehensive job order accounting classification which correlates resources consumed to cost.

The 16 activities stated that obtaining supplemental AFM funds has not been a difficulty. The most common justifications for additional funding requests are squadron predeployment maintenance, air frame kit changes, increased flying hours and higher maintenance costs caused by higher material prices. Most activities discuss AFM funding with the Type Commander monthly.

4. AFM Funds Problems

The 16 activities rely on the fund status reports and obligation rates for obtaining financial information for formulating decisions. The activities stated that the need to project either funding excesses or shortfalls is the most important information required. The AFM funding impact on the mission maintenance function is essential data.

A majority of the activities, nine of 16, believe that AFM funds are controlled. On the other hand, ten of the activities stated that no natural incentive exists at the activity level for reducing or lowering AFM obligations. One activity stated that it is a negative incentive. If an activity reduces AFM obligations, the Type Commander will reduce future AFM grants. The incentive is to spend all the AFM funds.

Three activities believe that AFM funding is a bottomless pit because additional funding is always available from the Type Commander. The remaining activities stated that the austere funding environment and competition for funds has restricted the activities funds availability.

The activities most significant AFM problem areas are:

a. Turnover of military personnel performing accounting tasks

b. Lack of current financial funds status caused by pipeline obligation delays

c. Insufficient training of military personnel performing accounting tasks

d. Improperly prepared obligation documents and price adjustments.

The suggestions for improving AFM management are:

a. Formal Standardized Procedures for job order costing, memorandum recording keeping and financial edit

b. Assignment of civilian accounting personnel to cost centers

c. Delegating legal funds responsibility to the cost centers.

5. Summary

The preceding findings can be summarized as follows:

a. The NAS manages AFM funds not as a total system but from an obligational rate performance

b. Performance objectives and measurement goals do not correlate AFM funds with readiness

c. The financial structure collects the data for presentation to the FHCR for baseline type aircraft maintenance cost per hour

d. NAS management control emphasizes projecting obligational rates and obtaining sufficient funding for performing the maintenance mission

e. The AFM funds manager is the control point.

The 16 NAS manage AFM funds at the local level without significant guidance from the Type Commander. Established RMS

accounting collecting procedures is the single similarity among the activities financial control systems. The decentralized control environment allows the activities freedom to select financial and management control systems that suit their needs. The significant insight provided by the activities is the wish for a more centralized AFM funds control system. A system that standardized local procedures.

EXHIBIT 9

SURVEY NAVAL AIR STATIONS

NAS ALAMEDA

NAS BARBERS POINT

NAS BRUNSWICK

NAS CECIL FIELD

NAAS FALLON

NAS JACKSONVILLE

NAS KEY WEST

NAS LEMOORE

NAS MIRAMAR

NAS MOFFETT

NAS NORFOLK

NAS NORTH ISLAND

NAS OCEANA

NAS PATUXENT RIVER

NAS PENSACOLA

NAS WHIDBEY ISLAND

EXHIBIT 10

NAS QUESTIONNAIRE

ORGANIZATION_____ DATE_____

POINT OF CONTACT _____ TITLE _____

DEPARTMENT _____ TYPE COMMANDER _____

A. GENERAL BACKGROUND

1. Does the activity have a financial management instruction? Last revision.

2. Does the activity have an AFM financial management instruction?

3. What was the amount of your Fiscal Year 1979 AFM Grant?

4. What was the amount of your Fiscal Year 1979 Undelivered Orders? (as of 30 September 1979)

5. What was the amount of your Fiscal Year 1979 supplemental AFM Requests?

6. Is the Comptroller, acting for the Commanding Officer, the NAS AFM funds manager?

7. Is there a formal system at the NAS to distribute AFM funds to the cost centers?

8. Are the AFM funds distributed monthly/quarterly?

9. Does the NAS AFM funds manager solicit budget inputs from the cost centers?

10. Does the NAS submit AFM budget requests to the Type Commander?

B. INTERNAL PERFORMANCE MEASUREMENT

11. How is performance, relative to the AFM grant measured?

12. How is performance measurement communicated to the cost centers? How often?

13. Are performance standards set and measured for AFM usage? Who sets the standards? How are they set?

14. How often is performance and standards reviewed?

15. Who conducts the performance and standards variance review?

16. If AFM is a resource, what is the output?

17. How often is output measured?

18. Is the output measureable against the AFM input?

19. Is there a method to measure the efficiency of AFM obligations?

20. Is there a method to measure the effectiveness of AFM obligations?

C. INTERNAL MANAGEMENT CONTROL

21. What criteria is used to distribute AFM funds to the cost centers?

22. What is the percentage breakdown for the distribution of AFM funds to the cost centers?

23. What action is taken in the event of AFM funds shortage?

24. What information does the AFM funds manager provide to the NAS Commanding Officer? How often?

25. What information does the AFM funds manager provide to the cost centers? How often? To whom?

26. How often are the cost centers memorandum accounting records verified with the RMS output? Who does the verification? What action is taken to correct variances?

27. Does Internal Review examine areas within AFM funds control?

28. Are reviews conducted to determine that AFM funds are obligated only for approved material/service IAW NAVSO P-3013-2?

29. Are reviews conducted to determine that AFM obligations are charged to the correct Job Order Number?

30. How often are MOV conducted?

31. Are AFM obligations checked for financial edit? Who is responsible? What is checked?

D. NAS/TYPE COMMANDER INTERFACE

32. What measurement does the Type Commander use to evaluate your AFM funds performance?

33. What financial data is submitted to the Type Commander? How often?

34. Have you ever experienced difficulty in obtaining additional AFM funds? What justification is given?

35. How often do you discuss AFM funding with the Type Commander?

E. NAS AFM FUNDS PROBLEMS

36. What do you consider as the most important information available from the AFM data collection system?

37. Is AFM funds control at your activity manageable or controlled?

38. Are there any incentives at your activity to reduce or lower AFM obligations?

39. Is AFM funding a bottom-less pit? Why?

40. What is your most significant problem area with AFM funds?

41. What can be done to improving AFM management at your activity? Navy wide?

42. Are cost savings available if AFM management attention was changed, increased or decreased?

EXHIBIT 11

NAS SURVEY: TITLES OF INDIVIDUALS

TITLE	NUMBER CONTACTED
COMPTROLLER	5
DEPUTY COMPTROLLER	4
BUDGET OFFICER/ANALYST	8
INTERNAL REVIEW DIVISION HEAD	3
SUPPLY OFFICER	3

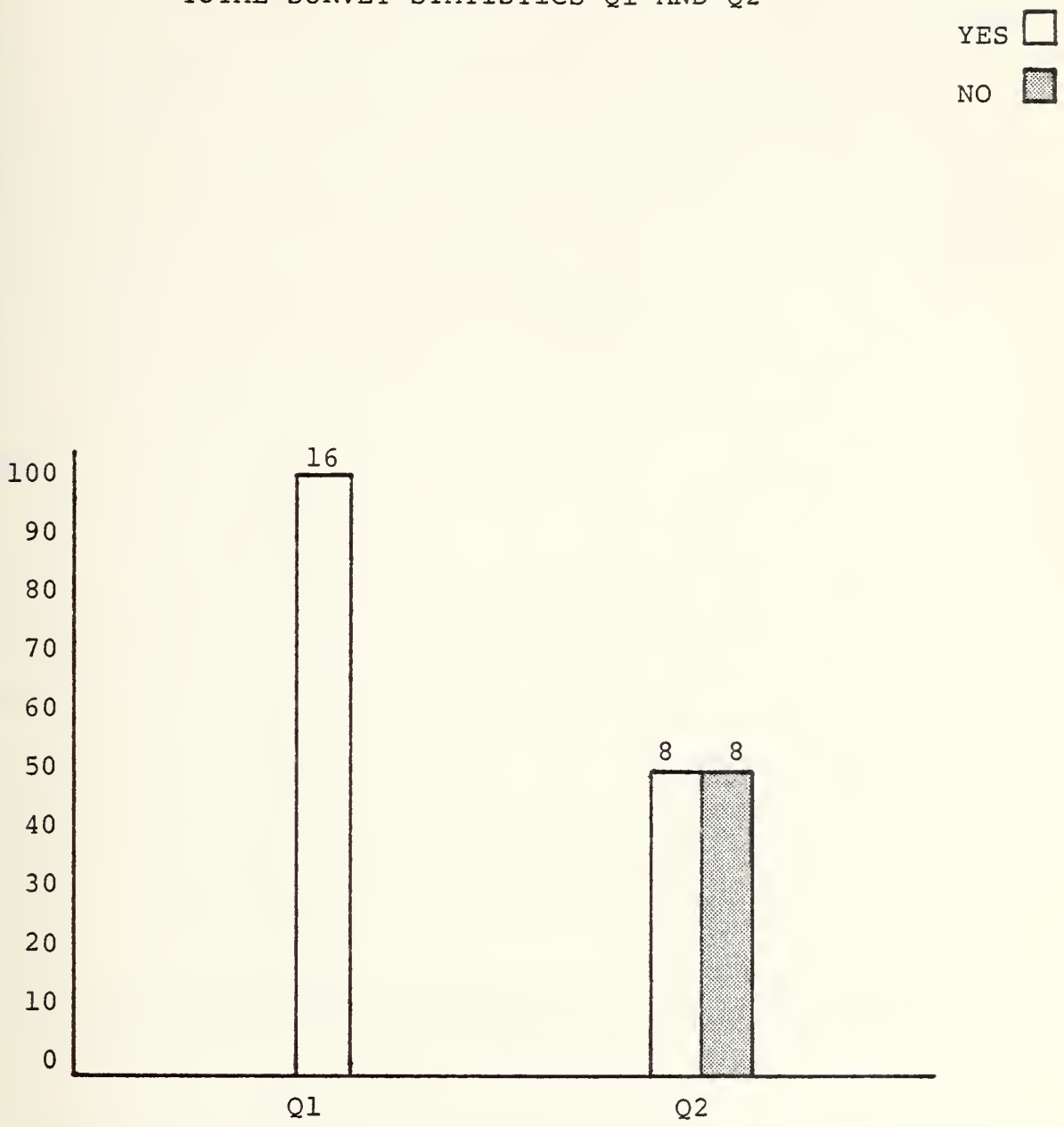
EXHIBIT 12

EAST COAST - WEST COAST BREAKDOWN

CNAL NAS	CNAP NAS
NAS BRUNSWICK	NAS ALAMEDA
NAS CECIL FIELD	NAS BARBERS POINT
NAS JACKSONVILLE	NAAS FALLON
NAS KEY WEST	NAS LEMOORE
NAS NORFOLK	NAS MIRAMAR
NAS OCEANA	NAS MOFFETT
NAS PATUXENT RIVER	NAS NORTH ISLAND
NAS PENSACOLA	NAS WHIDBEY ISLAND

EXHIBIT 13

TOTAL SURVEY STATISTICS Q1 AND Q2

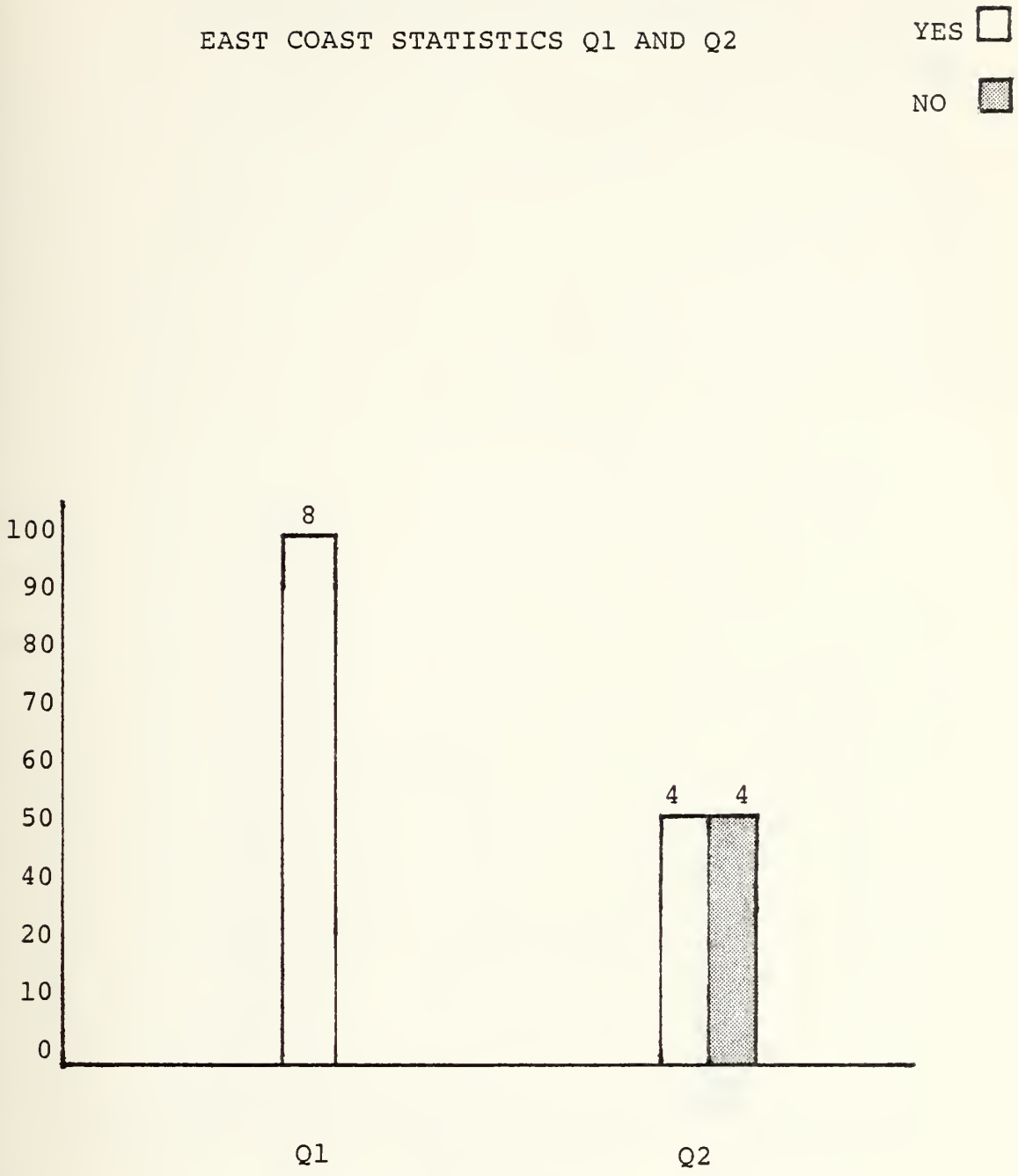


Q1. Does the activity have a financial management instruction?

Q2. Does the activity have an AFM financial management instruction?

EXHIBIT 14

EAST COAST STATISTICS Q1 AND Q2



Q1. Does the activity have a financial management instruction?

Q2. Does the activity have an AFM financial management instruction?

EXHIBIT 15

WEST COAST STATISTICS Q1 AND Q2

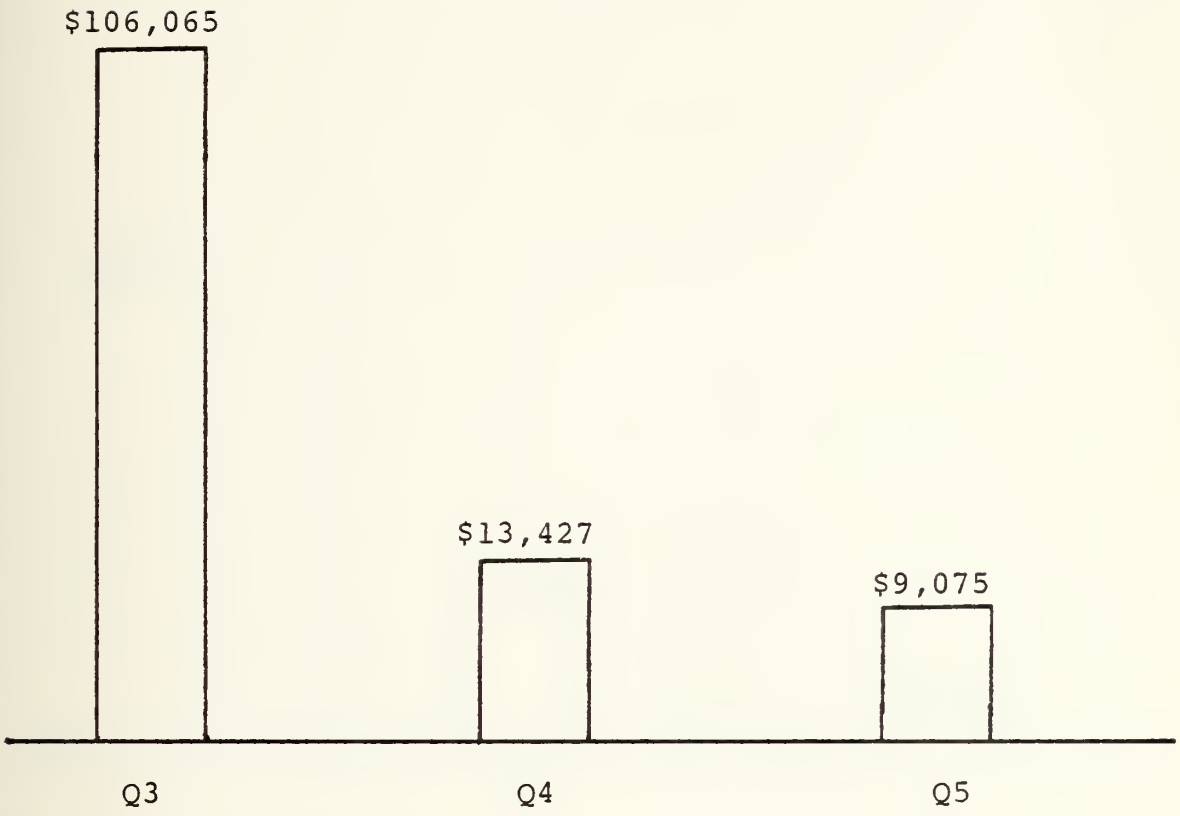
Q1. Does the activity have a financial management instruction?

Q2. Does the activity have an AFM financial management instruction?

EXHIBIT 16

TOTAL SURVEY STATISTICS Q3, Q4 AND Q5

(000)



Q3. FY 1979 AFM Grant

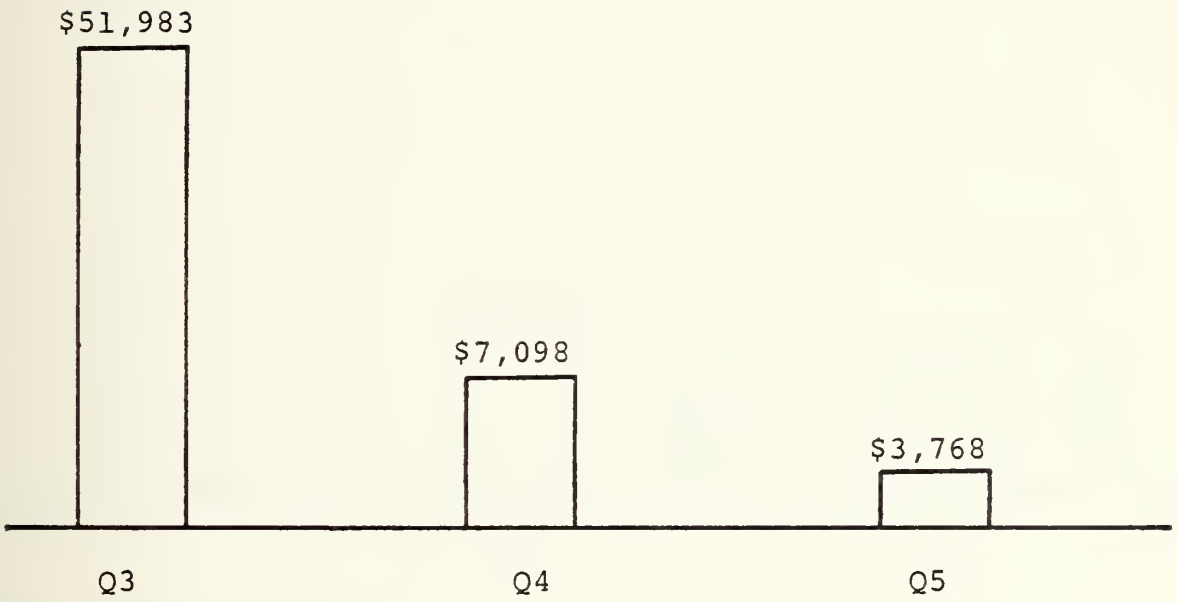
Q4. FY 1979 Undelivered Orders

Q5. FY 1979 Supplemental AFM Requests

EXHIBIT 17

EAST COAST STATISTICS Q3, Q4 AND Q5

(000)



Q3. FY 1979 AFM Grant

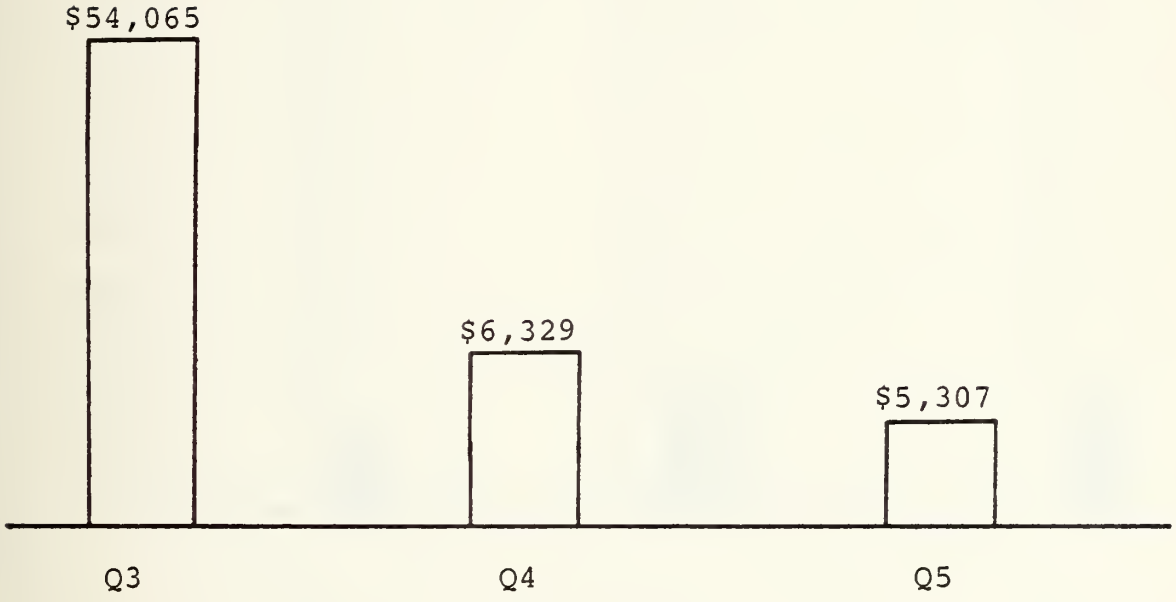
Q4. FY 1979 Undelivered Orders

Q5. FY 1979 Supplemental AFM Requests

EXHIBIT 18

WEST COAST STATISTICS Q3, Q4 AND Q5

(000)



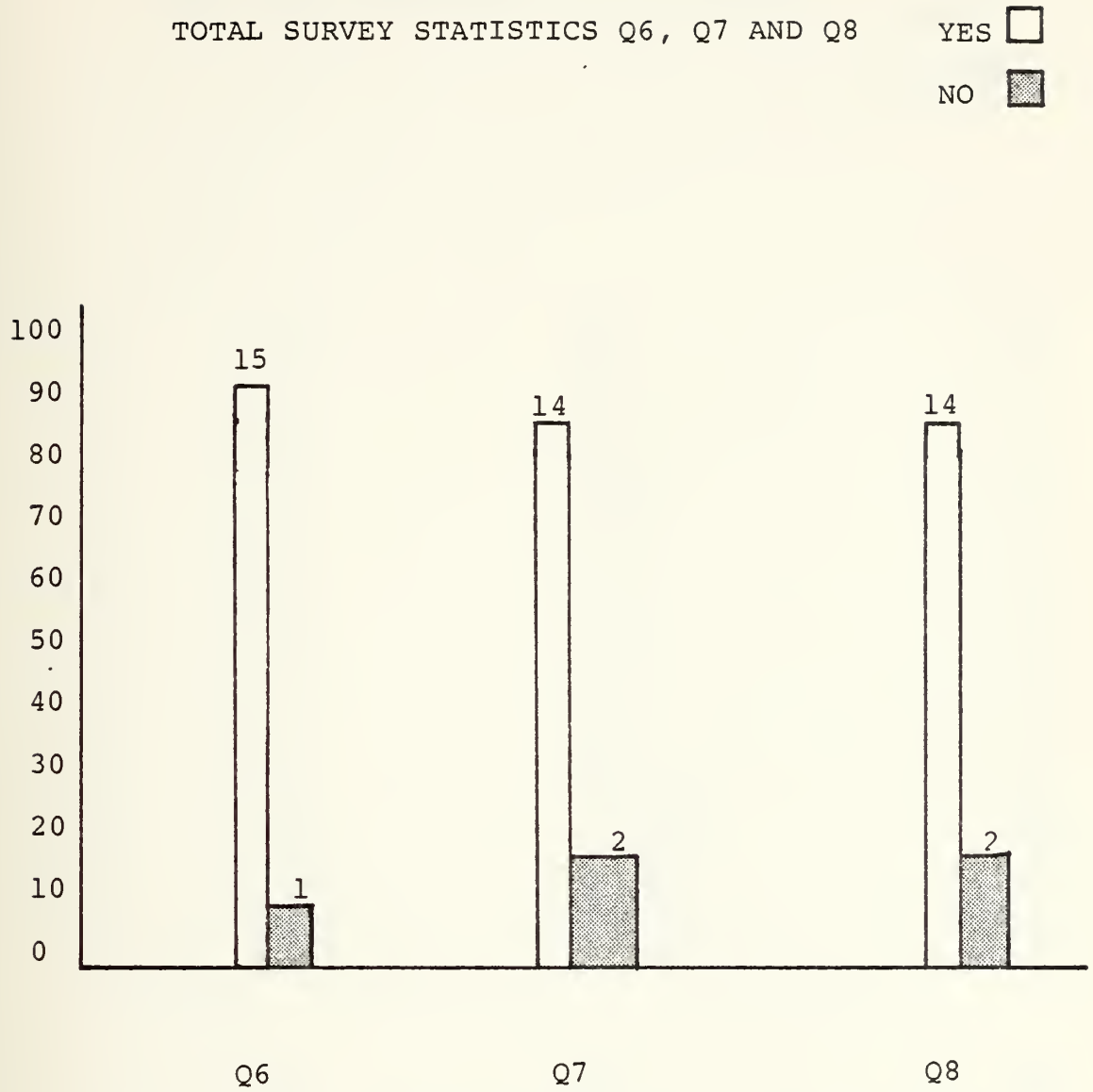
Q3. FY 1979 AFM Grant

Q4. FY 1979 Undelivered Orders

Q5. FY 1979 Supplemental AFM Requests

EXHIBIT 19

TOTAL SURVEY STATISTICS Q6, Q7 AND Q8



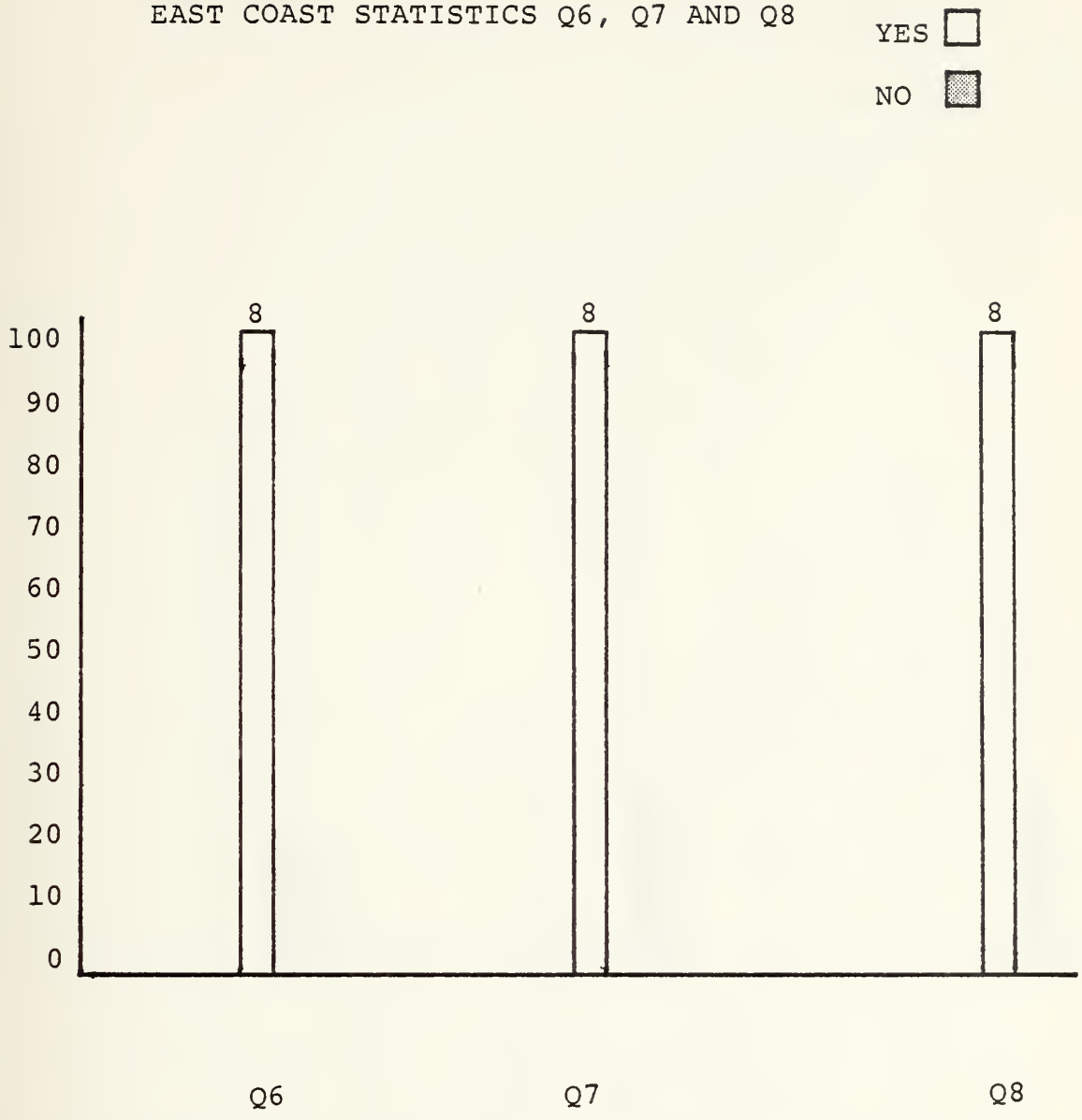
Q6. Is the Comptroller (Commanding Officer) the AFM funds manager?

Q7. Is there a formal system at the NAS to distribute AFM funds to the cost centers?

Q8. Are AFM funds distributed quarterly?

EXHIBIT 20

EAST COAST STATISTICS Q6, Q7 AND Q8



Q6. Is the Comptroller (Commanding Officer) the AFM funds manager?

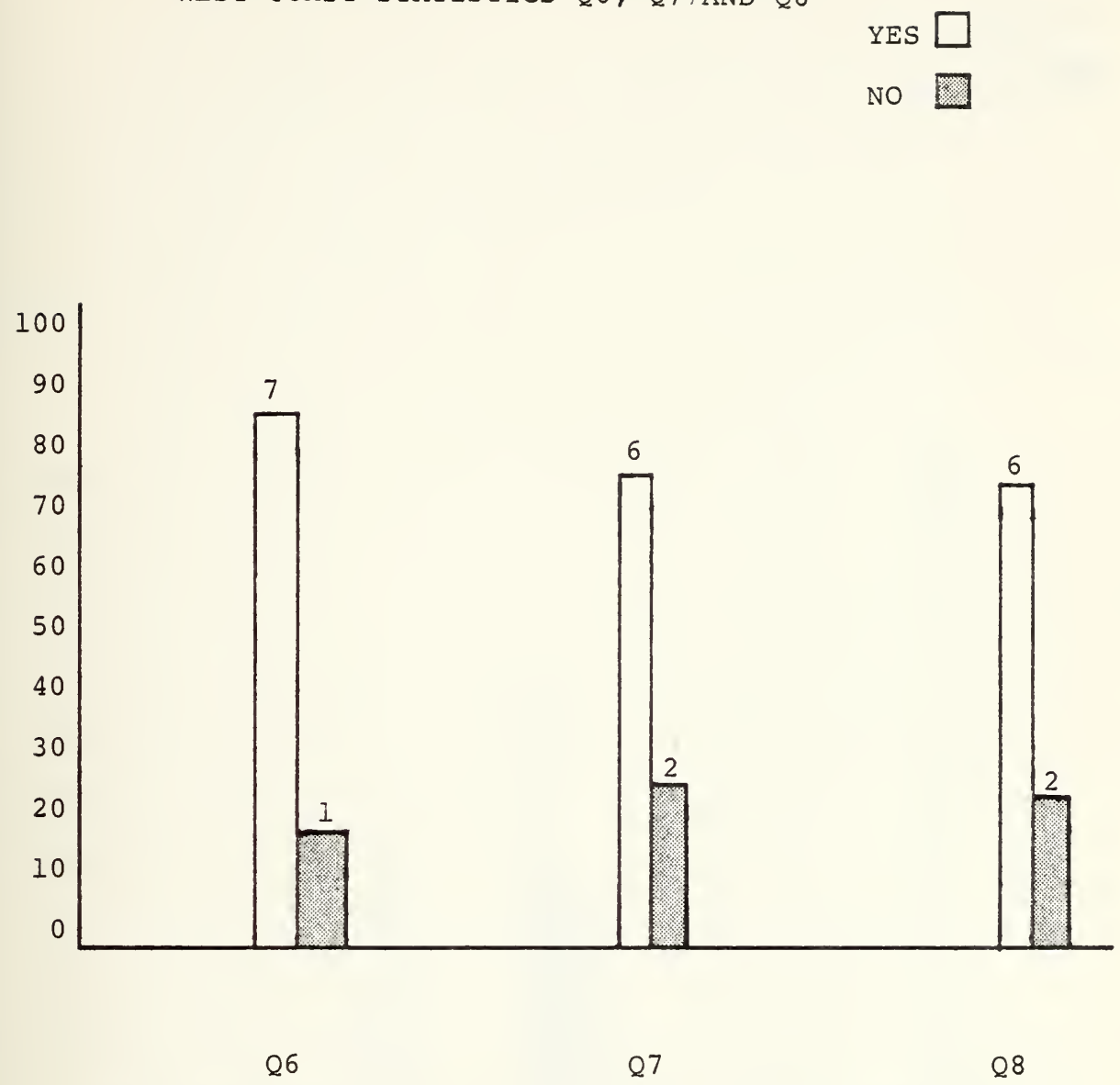
Q7. Is there a formal system at the NAS to distribute AFM funds to the cost centers?

Q8. Are AFM funds distributed quarterly?*

*CNAL distributes AFM funds monthly, effective 1 July 1980 IAW CNO ltr 925C/591143, 5450/3 dtd 24 April 1980.

EXHIBIT 21

WEST COAST STATISTICS Q6, Q7, AND Q8



Q6. Is the Comptroller (Commanding Officer) the AFM funds manager?

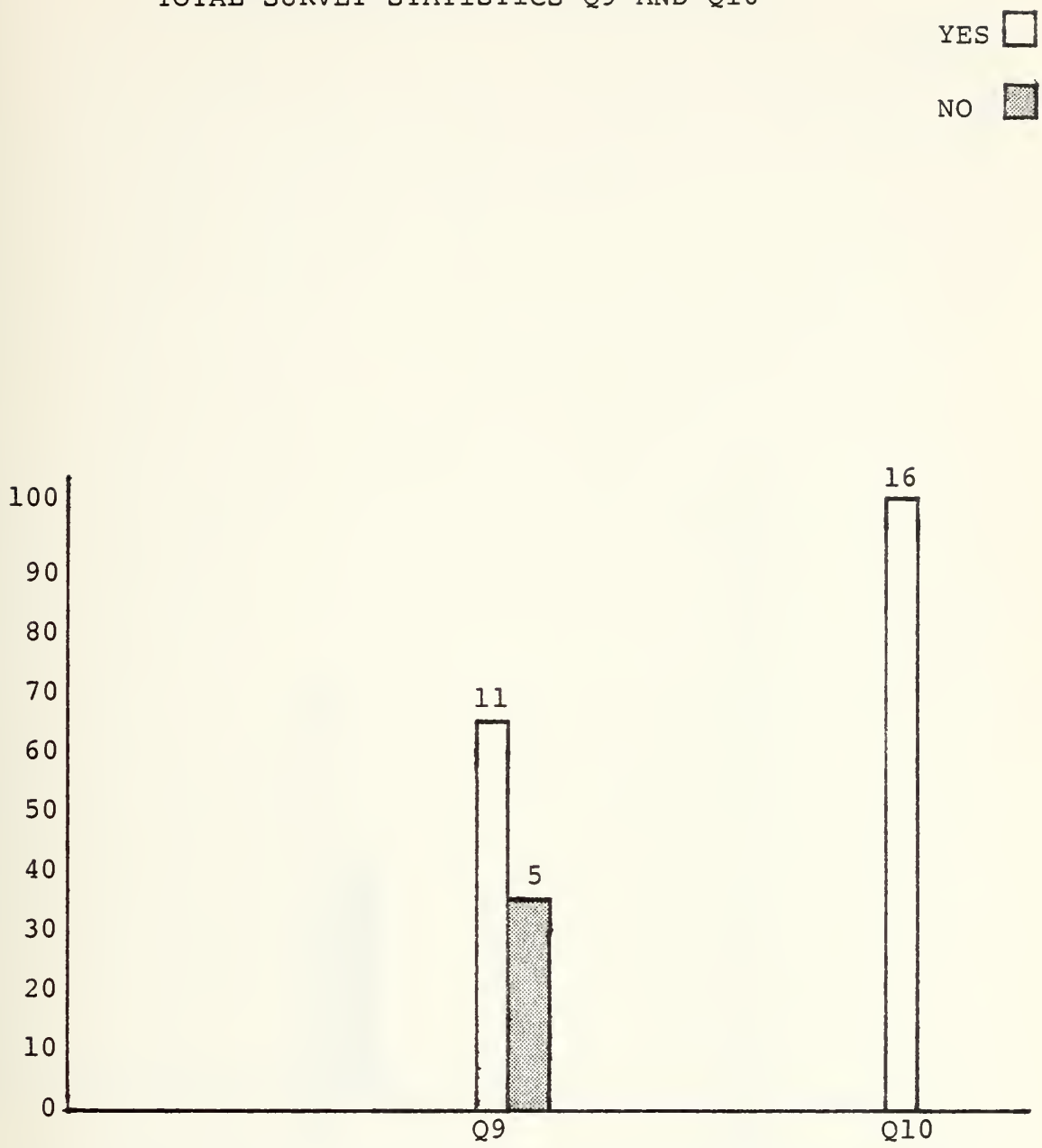
Q7. Is there a formal system at the NAS to distribute AFM funds to the cost centers?*

Q8. Are AFM funds distributed quarterly?**

* 2 Activities manage funds centrally
** 2 Activities manage funds centrally

EXHIBIT 22

TOTAL SURVEY STATISTICS Q9 AND Q10

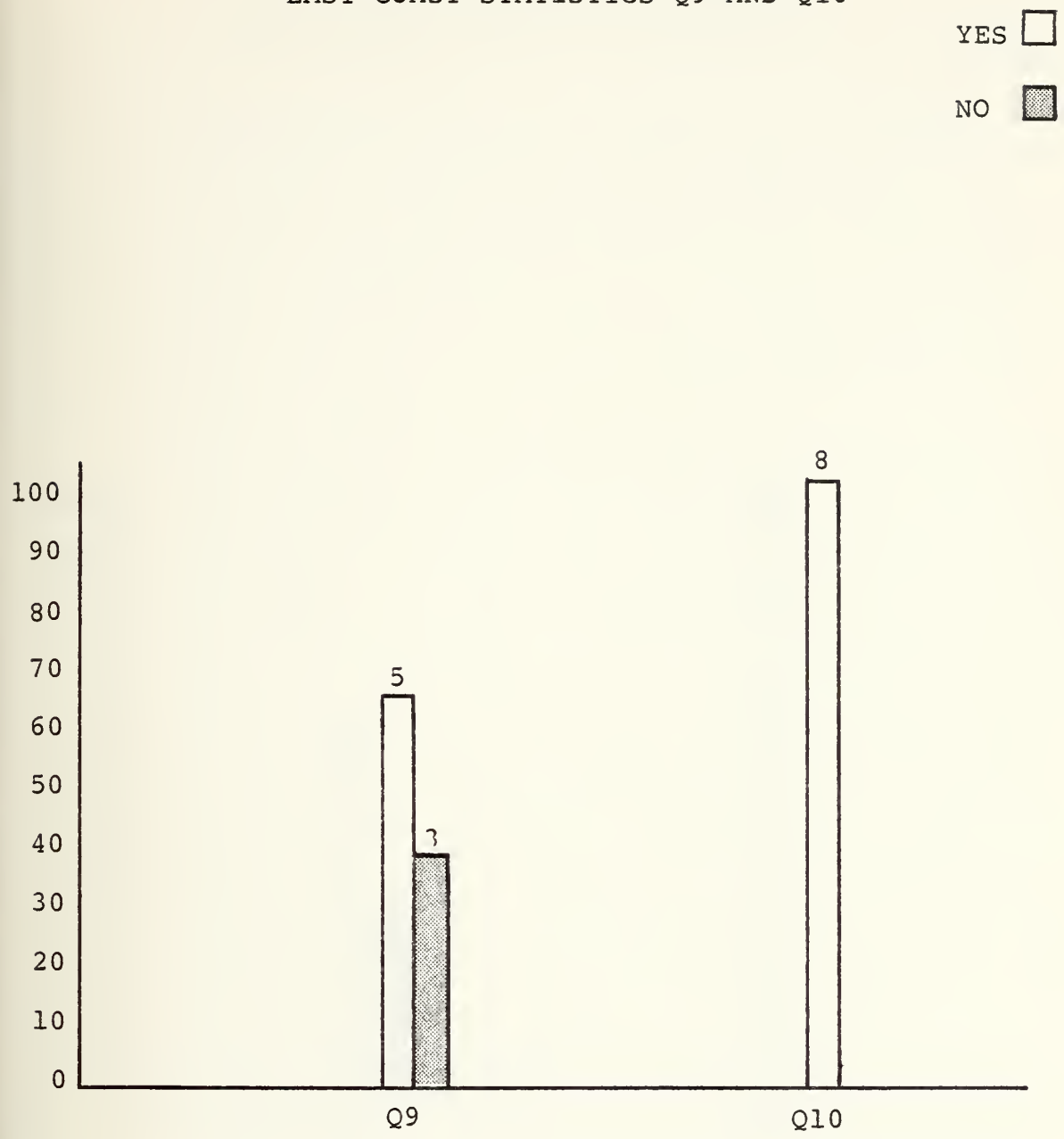


Q9. Does the NAS AFM funds manager solicit budget inputs from the cost centers?

Q10. Does the NAS submit AFM budget requests to the Type Commander?

EXHIBIT 23

EAST COAST STATISTICS Q9 AND Q10

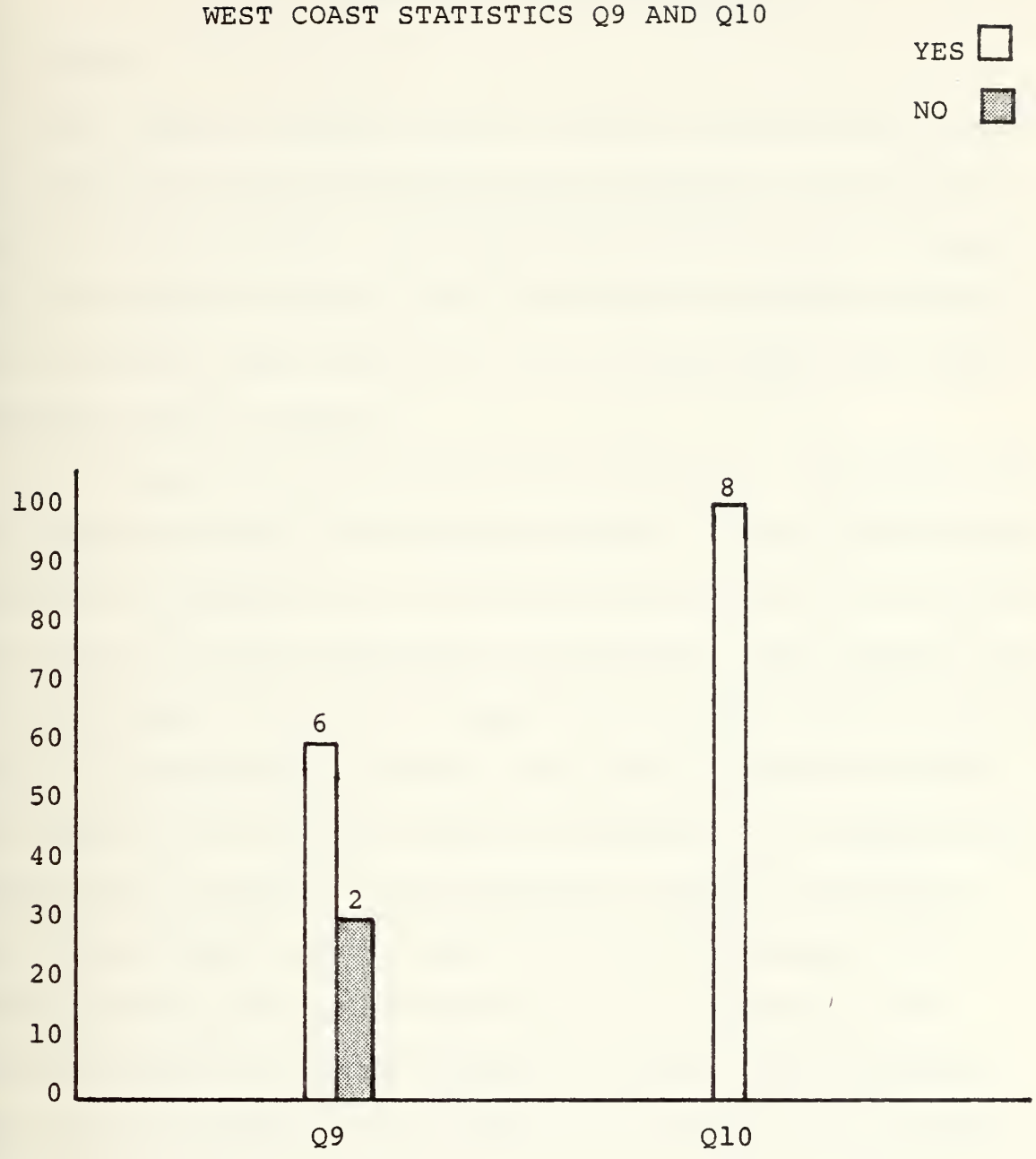


Q9. Does the NAS AFM funds manager solicit budget inputs from the cost centers?

Q10. Does the NAS submit AFM budget requests to the Type Commander?

EXHIBIT 24

WEST COAST STATISTICS Q9 AND Q10



Q9. Does the NAS AFM funds manager solicit budget inputs from the cost centers?

Q10. Does the NAS submit AFM budget requests to the Type Commander?

VII. COMMERCIAL AIRLINE SURVEY

A. GENERAL

This chapter presents data on aviation maintenance financing collected during interviews with personnel employed by a major civilian airline. The material will be used in Chapter VIII to compare civilian fiscal management control practices with military fiscal management control practices and fiscal management control theory.

The chapter is divided into five sections. The first section provides general background material on civilian airline aircraft maintenance, and lists some differences in the civilian versus military maintenance environment. The second section describes the general organization of the airline corporation. The description follows the line of authority within the corporation from the Board of Directors to a typical maintenance shop foreman. Non-maintenance related activities such as marketing are excluded from the description. The third section provides information on the budgeting and funding aspects of the maintenance function. It describes how a typical budget is developed and executed. The fourth section provides information on management control based on survey questions asked during the interviews which were adapted from the NAS survey. The final section provides a summary of the information in the previous sections as well

summarizing the corporation's management control system. Personnel are quoted throughout this chapter without reference due to the proprietary nature of the interviews.

B. BACKGROUND

Commercial airlines, like the military services, commit a considerable amount of their resources to maintain their fleets of aircraft in operating order. The extent of this commitment was highlighted in a special report appearing in AIR TRANSPORT WORLD. [11] The report stated that over 20% (190,000) of the labor force employed by the world airlines was involved in maintenance and engineering activities. In 1979 the airlines spent 7.4 billion dollars on maintenance activities and they further projected that 8.4 billion dollars would be spent in 1980. The report noted that 70% of the airlines' maintenance was done in house and that only 15% of the airlines polled contract out more than half of their maintenance. Finally, it was noted that the airlines had plans for spending 1.6 billion dollars on new facilities and equipment over the next two years.

Generally an airline's maintenance organization is comprised of a primary maintenance facility and several field facilities. [30] The primary maintenance facility has comprehensive maintenance and overhaul capabilities for all of the aircraft in the fleet of the particular airline. Airline aircraft visit the primary facility for periods ranging from one day to several weeks to have scheduled and unscheduled

maintenance work performed and to undergo mandatory Federal Aviation Administration inspections. Repairs range from overnight cleaning and detailing to complete overhauls in which the aircraft is stripped down to a shell and all of the major assemblies such as engines, landing gear, flaps are removed, inspected, repaired and replaced.

The field activities are normally authorized to perform only troubleshooting and component replacement functions, such as replacement of a VHF radio. Field activities are usually colocated with large airports throughout the airline's major routes. Not all stops on all routes have field maintenance activities. If an aircraft experiences maintenance problems at an airport that lacks an organic field maintenance activity, repairs are accomplished either at another airline's field maintenance activity or a special team is flown in from the airline's primary maintenance activity.

There are three principal differences between the maintenance environments of the airlines and the military services [30]. First, the airlines operate for profit. Second, the airlines are in a much better position to predict the flight schedules of their fleets. Third, airline aircraft are generally less sophisticated than military aircraft in regard to equipment. This difference is particularly evident in the electronics area.

These three differences tend to have considerable weight in determining maintenance philosophy and execution.

Therefore, a one to one comparison of commercial practice with military practice is not meaningful. Nevertheless, the commercial airlines perform a basic maintenance function that has elements common to the military function and therefore selected comparisons should be useful.

C. ORGANIZATION

Airline organization at the corporate level is typical of most large commercial corporate organizations. The overall authority for deciding strategic policy rests with the board of directors. The board is comprised of fifteen to twenty leading business executives and they are responsible for ensuring that the stockholders receive a fair return on their investment. The airline studied for this thesis is organized in this manner and the remaining description will relate to that airline although the organization described is essentially similar for all major commercial airlines. [30]

While the board retains broad strategic authority, the authority and responsibility for executing daily operations is vested in the President and Chief Operating Officer. To assist the President with the business of the airline a staff is located at headquarters to provide expert advice on matters of policy. The staff consists of a personnel section, a planning section, a finance section, a medical section and a general counsel. The staff has no direct authority to alter company operations. A diagram is provided as Exhibit 25.

The President exercises operating authority through subordinate line managers. In this case the organization is divided into three distinct areas. The three areas are: Operations Support, Marketing Support and Geographical Division Operations. The Operations Support group is responsible for maintenance operations, computer and communications services, and systems operations control. The Marketing Support group is responsible for cargo, food services, inflight services and passenger marketing. The Geographical Divisions are responsible for terminal operations, field maintenance activities, ticketing, passenger processing and flight operations within their geographical areas. The airline's territory is divided into three geographical areas; Eastern, Western, and Central. A diagram depicting this section of the organization is provided as Exhibit 26.

Although some maintenance is accomplished at the field maintenance activities, the major portion of the maintenance effort in terms of both dollars and personnel is accomplished by the maintenance operations section of the Operations Support group. Therefore, the remaining discussion of the company organization will focus on the details of the maintenance operations section.

The structure of the maintenance operations section is quite similar to the corporate structure but on a much smaller scale. The manager of the section is assisted by a staff that includes; an executive assistant, a controller, and a per-

sonnel director. Operations within the section are divided on both process and functional lines. As shown in Exhibit 27 the section is divided into six divisions. The supply, administration, sales, and engineering divisions are essentially functionally specific. These divisions exist primarily to support the remaining two divisions in the actual maintenance effort. The functions of the supply and engineering divisions are logically associated with their titles. Administration is concerned with maintenance planning, statistical compilations and projections in addition to the standard maintenance records activity. Sales is primarily concerned with the contract efforts involved in providing maintenance services to other airlines.

The aircraft and engine divisions are process specific and the personnel attached to these divisions perform the actual maintenance work. Both divisions are divided into more specialized subsections. These subsections are further subdivided into work centers. Work centers are headed by a supervisor who normally controls four to eight foremen. The foremen in turn, supervise from five to twenty technicians. An example of this breakdown for the component repair subsection of the aircraft division is provided as Exhibit 28.

The preceding discussion relates specifically to organization at the primary maintenance facility. As noted previously, maintenance is also performed at locations called field maintenance activities. Field maintenance activities are hetero-

geneous in the size and scope of work authorized. However, the work is almost universally corrective in nature. Depending on the size of the activity, various functional and process specializations are apt to be included in their organizational structure. For example, the Atlanta field station may include an engines section, airframes and control surfaces section, and an avionics section. Maintenance performed normally consists of removal of failed components and replacement with spares from a local supply. The failed components are not repaired locally, but are shipped to the primary maintenance facility for overhaul. The most significant aspect of the field maintenance organization is that the field station supervisor reports to the Geographic Division Operations Manager rather than the Operations Support Group manager.

In summary, the typical airline is organized along functional lines. With one exception, field maintenance, the company's maintenance operations are organizationally separate from flight operations and the respective managers report through separate channels to the company president. Field maintenance operations are the responsibility of the Geographical Division manager and not the Maintenance Operations manager.

D. BUDGETING AND FUNDING THE MAINTENANCE EFFORT

Budgeting and funding for service activity operations are

subjects of some controversy in the management community. One major school of thought argues that a service activity should "sell" its "product" to the other divisions within the corporation at transfer prices fixed in various ways such as cost analysis or market surveys. The budget is then determined by a "sales" forecast and funding is delivered in proportion to the "product" generated and "sold" to the other corporate divisions. This particular type of financial framework is often favored in data processing applications.

A second methodology entails issuing the service activity's "product" to the other corporate divisions at no cost, so that the "product" becomes in essence a "free" good in much the same manner as the use of airports or air ways is without charge. The budget development in this case amounts to a projection of the quantity "product" required for some operating cycle and then translation of that quantity into an expense limit to be observed by the service activity. Normally funds are granted on a time phased basis rather than the "sales" basis of the transfer method.

Typically, airlines follow the latter method and therefore budget their maintenance activity on an expense limitation basis. Development of the budget at the airline sampled for this chapter followed that approach. The process is discussed in the following paragraphs.

The maintenance budget is based on a combination of historical costs and forecasted activity. In the sense that

collection and interpretation of costs is a part of the budget activity, then the budget development process is continuous. The actual yearly budget development begins about eight months prior to the beginning of the calendar year. At this time the staff at headquarters prepares a market forecast based on economic conditions, competitive conditions, and corporate goals. The forecast is developed in terms of route utilization and flying hours by type of aircraft. When approved this forecast is passed to the Operations Support Group for development of a maintenance budget.

At the maintenance operations level primary maintenance facility the forecast is further refined to produce the number of takeoff-landing cycles and the number of scheduled aircraft visits to the primary maintenance facility. This expanded forecast is developed by type of aircraft and is based in the flying hour projection, the route utilization, and company standards for scheduled maintenance of aircraft. Using historical data the forecast is then further developed to generate the number and type of component expected to require repair, by type of aircraft, based on the historical number of components requiring repair as a result of aircraft flying hours, takeoff-landing cycles, and scheduled maintenance visits.

This information is passed to the individual work center foremen. They in turn develop a budget for their work center that includes an estimate of the number of components that they expect to repair during the year, the labor cost per component

and the material cost per component. The estimate is summarized by total labor per year, total material per year and subtotal costs of labor and material per month. It should be noted that the headquarters forecast presents figures on a monthly basis because of the seasonal nature of the airline business. Monthly estimates are viewed as discrete units and actual flying hours do vary considerably from month to month.

In generating the work center forecasts, the foremen are constrained to utilize the flying hours, takeoff-landing cycles and scheduled maintenance visits estimates generated by the higher levels in the organization. In spite of these constraints, the foremen may adjust the number of components expected per flying hour, cycle and visit based on their own experience. Also, the labor and material estimates are the responsibility of the foremen and are based on historical data compiled by the administration sections of their divisions, as well as their own judgement. These cost per unit figures are the key figures for the work center budgets. Although the foremen make estimates of total work load they are not held strictly accountable for their accuracy. The labor and material costs per unit are negotiated with the supervisors who in turn negotiate them with the subsection managers. The costs per unit become part of the foremen and the supervisor's management by objectives (MBO) goals.

MBO is a management philosophy that includes four elements: Goal Setting, Action Planning, Self Control, and Periodic

Review. [28 p.16] No universal guides exist that specify the actions required for each of the four elements. Normally, though, an MBO system is structured so that employees participate in the goal setting process and ultimately negotiate their own goals with superiors. Performance evaluation is then based primarily on the attainment of the negotiated goals.

At the subsection level, for instance component maintenance, the costs per unit are officially linked with the volume estimates to generate a firm budget. This budget becomes part of that subsection manager's MBO goals, after the figure is negotiated with the division manager, who in this case is the aircraft division manager.

The budgets are negotiated at each successively higher level and ultimately approved in aggregate form at the corporate headquarters. A diagram of the budget process is provided as Exhibit 29.

Once the budget is approved it remains set for the year. Alterations are effected by generating percentage changes incrementing or decrementing the base budget. Such changes are kept to a minimum and used normally if a major change had occurred in actual versus forecast conditions.

Funding is provided in accordance with the budget. However, budget overruns are tolerated and dollars are available if justification is adequate. Unlike the government situation, no cap on obligational or spending authority exists. Managers who overrun their budgets with any regularity and without

good reason are moved to less responsible positions.

To account for the dollars spent and to assist in costing the repair of individual components, the airline has developed a job order type costing system. The system is designed to account for costs by work center, by aircraft type and by type of component. A series of unique job orders are used to assign costs of labor and material. Costs for repair of assemblies below the component level are assigned to unique subassembly job order numbers, and costs can be traced back to the component. When repairs are required on subassemblies that are common to several components component cost visibility is lost. If the subassemblies are common to several types of aircraft, for instance engine subassemblies, then aircraft cost by type visibility is lost.

In summary, the maintenance budget is developed from a marketing forecast generated at company headquarters. That forecast is refined and expanded by the maintenance organization using historical data to derive the expected number of maintenance actions during the year. This forecast of expected maintenance actions is then used with other historical data and personal judgement by work cetner foremen to develop estimates of repair costs for components on a per unit basis. The cost estimates are negotiated at each level as part of a MBO program and aggregated at each successively higher section within the maintenance organization ultimately producing the overall maintenance budget. The budget is fixed for one

year and management bonuses and career advancements are tied very closely to MBO budget goals.

E. MANAGEMENT CONTROL SURVEY FINDINGS

This section summarizes the information gathered in response to specific questions asked of airline personnel. The questions were adapted from the NAS survey and relate primarily to performance, measurement techniques, performance standards and feedback mechanisms. The survey utilized is shown in Exhibit 30.

In response to the series of questions on performance measurement the respondents indicated that managers at all levels were graded or evaluated relative to the budget that they had previously negotiated. One individual stated that managers were evaluated on the "bottom line" and that if a particular account was over budget, for instance labor dollars for altimeters, the foreman or supervisor would be questioned, but it was "OK" as long as the difference was made up in another account. Thus the overall budget for each activity for each month appeared to be the major performance indicator.

Budget data are communicated to the individual managers on a monthly basis by a "cost readback" report. This data is presented by individual job order number for certain control items and summarized for the remaining job order numbers. Managers at successively higher levels receive reports that summarize their subordinates' budget performance. The super-

visors also have the capability to receive more detailed data on request.

Performance standards at this organization are synonymous with the MBO budget. In that sense the standards are set by a mutual agreement in meetings with each individuals' superior. In practice, the respondents stated that "across the board cuts" were sometimes imposed but these were described as performance goals rather than actual adjustments to the budget. [30]

The performance standards are set for the year when the budgets are approved. [30] However, the organization publishes a monthly outlook that includes changes resulting from actual conditions. This outlook does not change the performance standards but does serve to update managers on what top level management expects.

Because of the MBO system, each manager conducts an analysis of the variance in each activity's budget performance on a monthly basis, in order to discuss the MBO goals with the superior. In addition personnel in the Controller section conducts variance analyses on specific management identified items.

When asked about the measure of the organization's output, the respondents were not sure that the output was quantifiable. [30] The organization had experimented with a system designed to quantify labor hours on a standard and then relate that measure to productivity. Additional discussion indicated

that the organization's output could be considered to be repaired aircraft and aircraft components. However since the organization was charged with ensuring that serviceable aircraft were available for scheduled operations, the component criteria was considered to be too restrictive. Since output was difficult to quantify, measuring efficinecy and effectiveness was difficult to accomplish. One respondent noted that effectiveness was attained if the organization met corporate goals. [30] Another noted that measuring efficiency related to overall organizational output was "tough". [30]

Internal review's role in the management of the maintenance budget was limited to investigations related to fraud and theft of company assets. [30] Audits for efficiency and economy are not conducted in any formal manner. The respondents stated that the MBO system and its required monthly reviews were considered to be adequate.

In response to the question, "How is the activity measured by the next higher level?" the employees indicated that the organization was graded on budget and schedule performance. One respondent noted that the goal was to "provide a serviceable, clean reliable aircraft at the gate on schedule within a reasonable cost." [30] Additional discussion indicated that the schedule criteria was a negative criteria in that feedback was immediate and negative if a schedule was missed. Ramifications of this type of error included missed salary increases and even transfer. Meeting the schedule was

considered to be taken for granted. In contrast, budget performance clearly provided both positive and negative reinforcement relating to salary and promotional opportunities.

The respondents indicated that the organizational manager traveled to headquarters on a monthly basis to discuss the previous month's performance. This action was in accordance with the MBO policy.

In discussing increases in the budget and required justifications, the respondents indicated that the organizational manager carried the responsibility to justify increases or overruns to higher level management. They also indicated that it was unnecessary to request additional funds as dollars were always available to repair the aircraft. The difficulty for all levels of management was explaining the increases in an adequate fashion to the next higher level of management.

The most important information in managing the maintenance budget was the monthly "read back" of cost data. The respondents indicated that the most effective means of keeping repair costs down was through the use of budget goals and budget cuts. Since managers' salaries were tied to goal accomplishment, natural incentives existed to meet or beat the official goals. The organization also used a cost improvement program and a productivity program. It was the opinion of one respondent that these programs were of marginal effectiveness. [30]

Finally, when questioned on the problems in managing the maintenance budget, the respondents indicated that a significant

problem existed with unverified failures. An unverified failure of a component occurs when a component is removed from an aircraft because it is allegedly faulty but when the component is checked at the primary maintenance facility it functions normally. In most cases the components are removed from aircraft under severe schedule constraints by maintenance personnel at the field maintenance facilities. The problem is of concern because of the expense involved in shipping the component from the field activity to the primary maintenance facility, the loss of the use of the component while it is in transit, and the expense involved at the primary maintenance facility in unnecessarily testing and checking the component. It was thought that the situation existed because: the field personnel were under a time constraint to repair a broken aircraft, and the field personnel did not report to the Operations Support manager, and because the field personnel received components as free goods.

F. SUMMARY

The major airlines are organized, at the corporate level, in the same manner as most large businesses. A typical airline is organized at the operating level into three distinct areas:
Operations support - which includes major maintenance, communications and systems operations control;
Marketing support - which includes cargo, food service, passenger marketing and inflight services;

Geographical divisions - which include flight operations, passenger processing and field maintenance.

The typical airline develops its maintenance budget from a marketing forecast and refines this forecast using historical data to derive the expected number of maintenance actions required during a year. This forecast is used in a combination top-down bottom-up approach to develop a maintenance budget that is negotiated in a MBO environment. Managers at all levels are motivated to meet MBO goals because goal accomplishment is tied to salary, and other career implications.

The typical airline has a developed management control system that focuses on budget control. The system sets standards in a participative manner. There is a feedback system that provides performance data; and analyses are conducted on a frequent basis to determine the cause for variances. Actions are taken to adjust behavior to conform to the standards. There does not appear, however, to be a method for measuring and promoting efficiency and effectiveness.

EXHIBIT 25

COMMERCIAL AIRLINE SENIOR MANAGEMENT AND STAFF

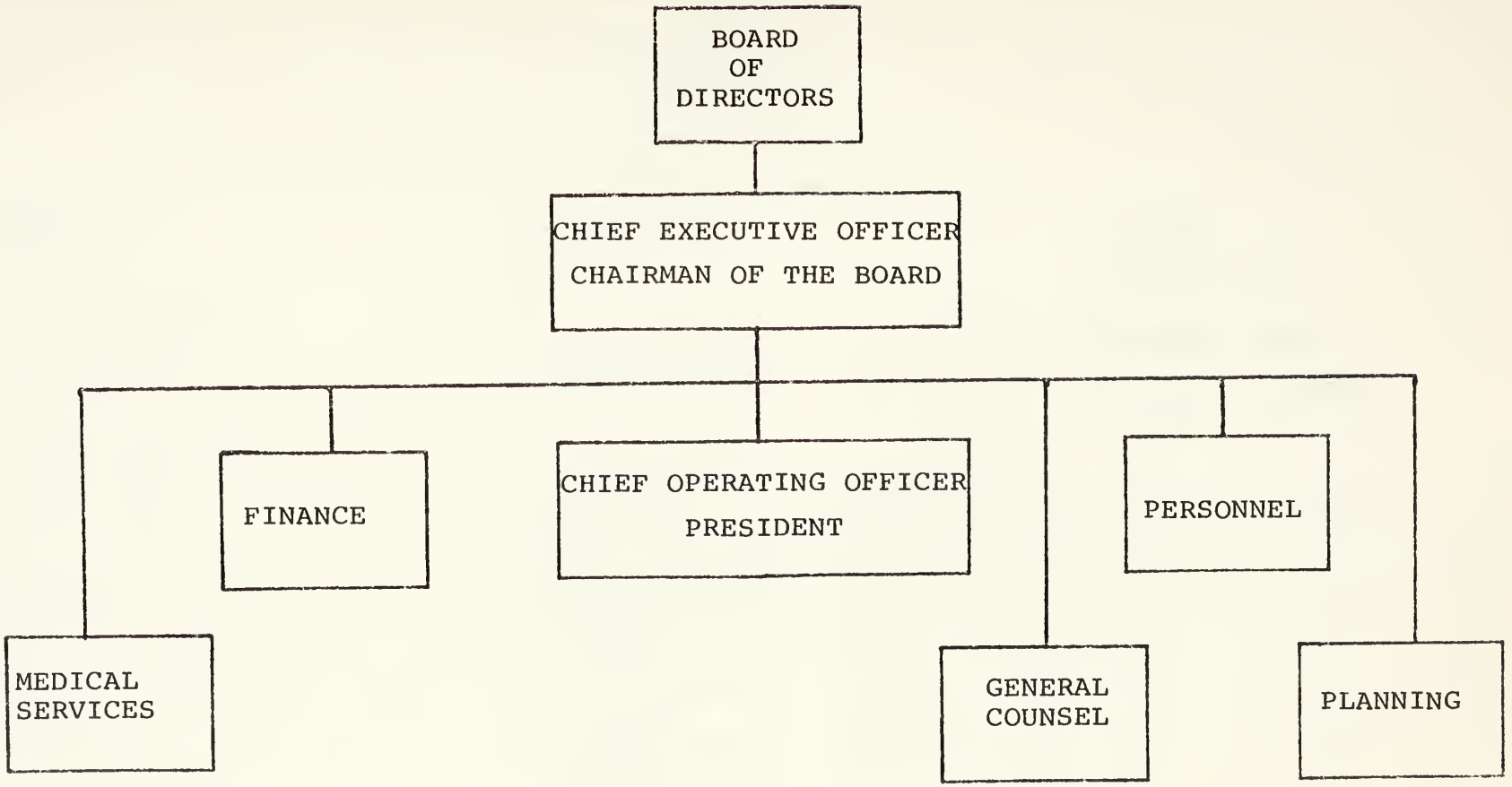


EXHIBIT 26
COMMERCIAL AIRLINE OPERATING MANAGEMENT

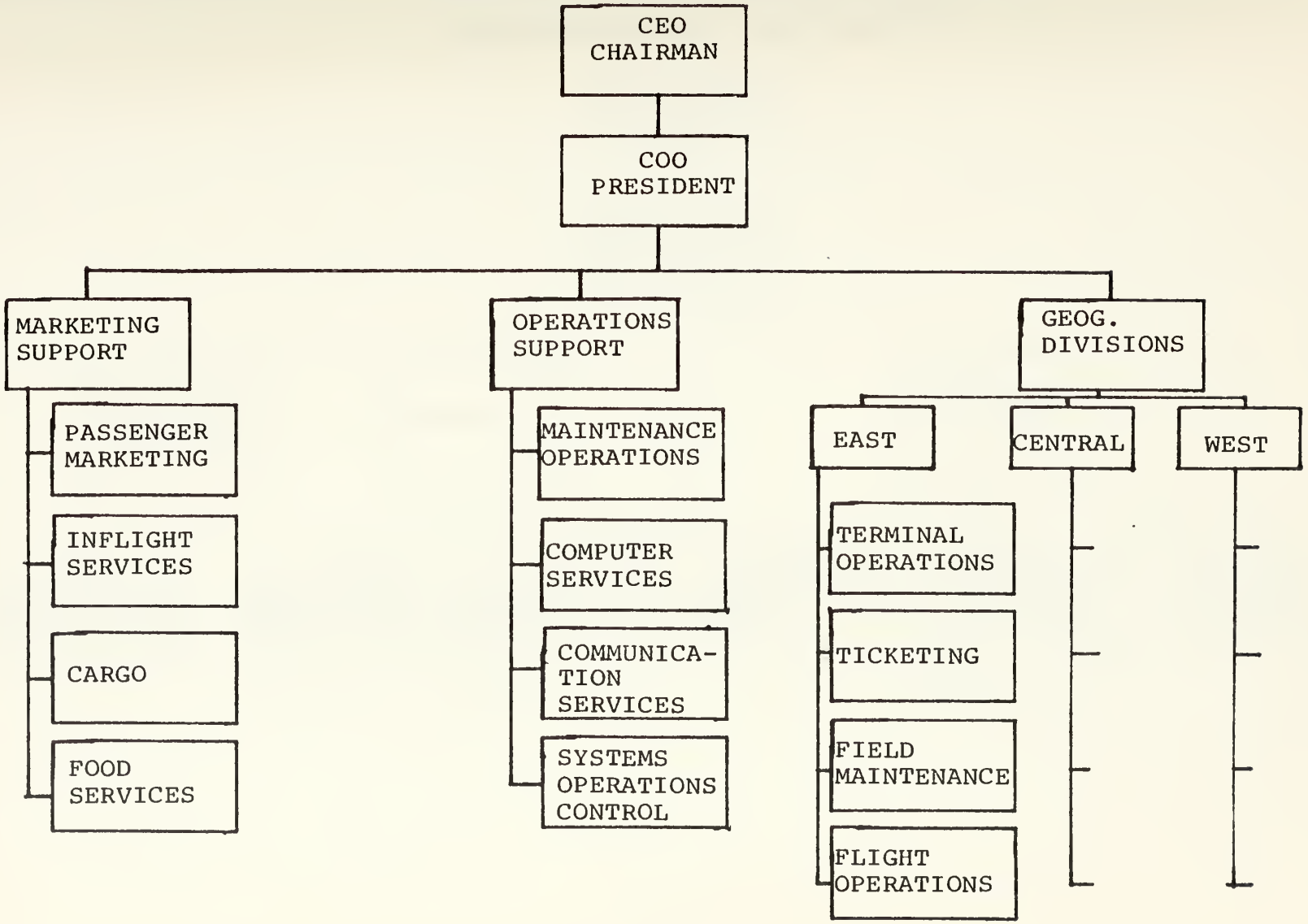


EXHIBIT 27

OPERATIONS SUPPORT GROUP GENERAL

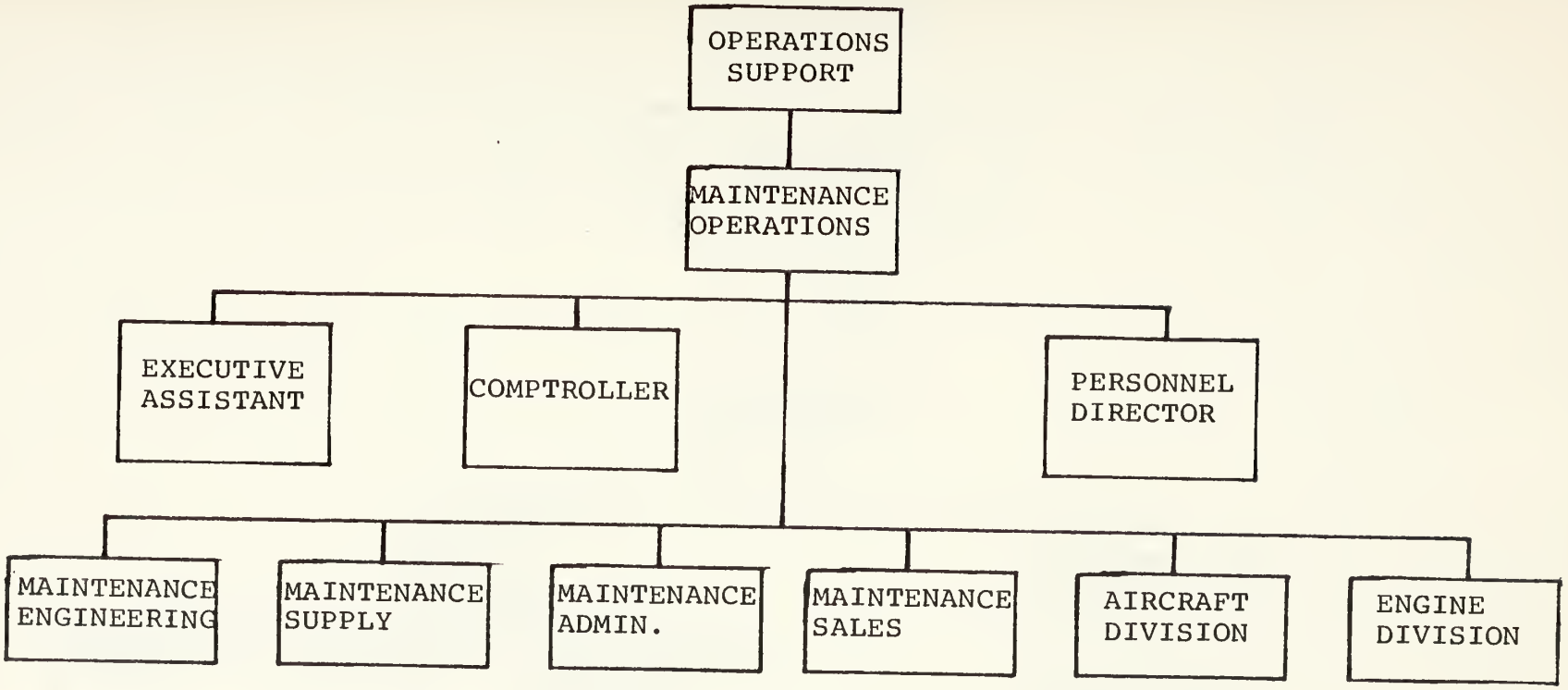


EXHIBIT 28

OPERATIONS SUPPORT GROUP DETAILED

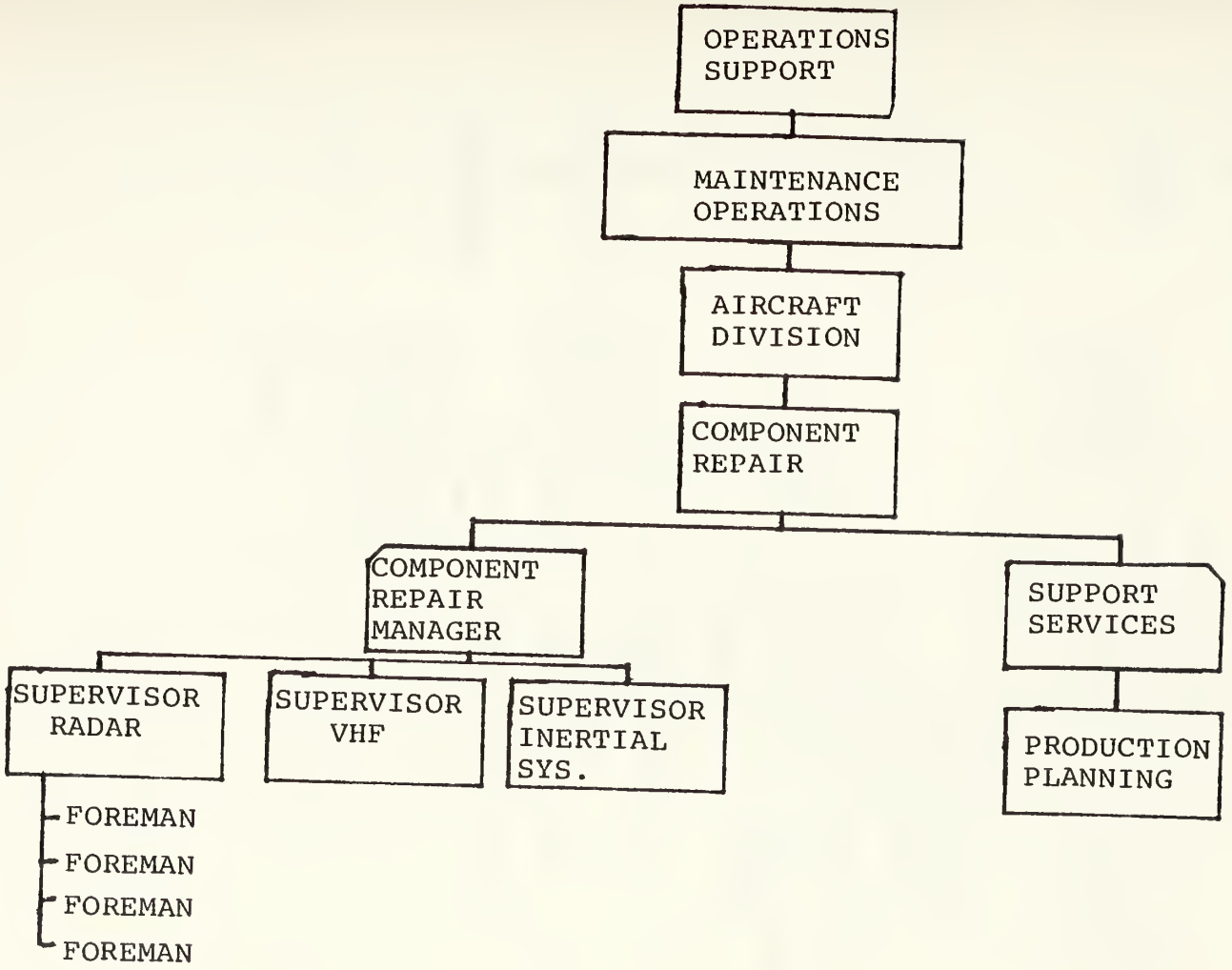


EXHIBIT 29
COMMERCIAL AIRLINE BUDGET PROCESS

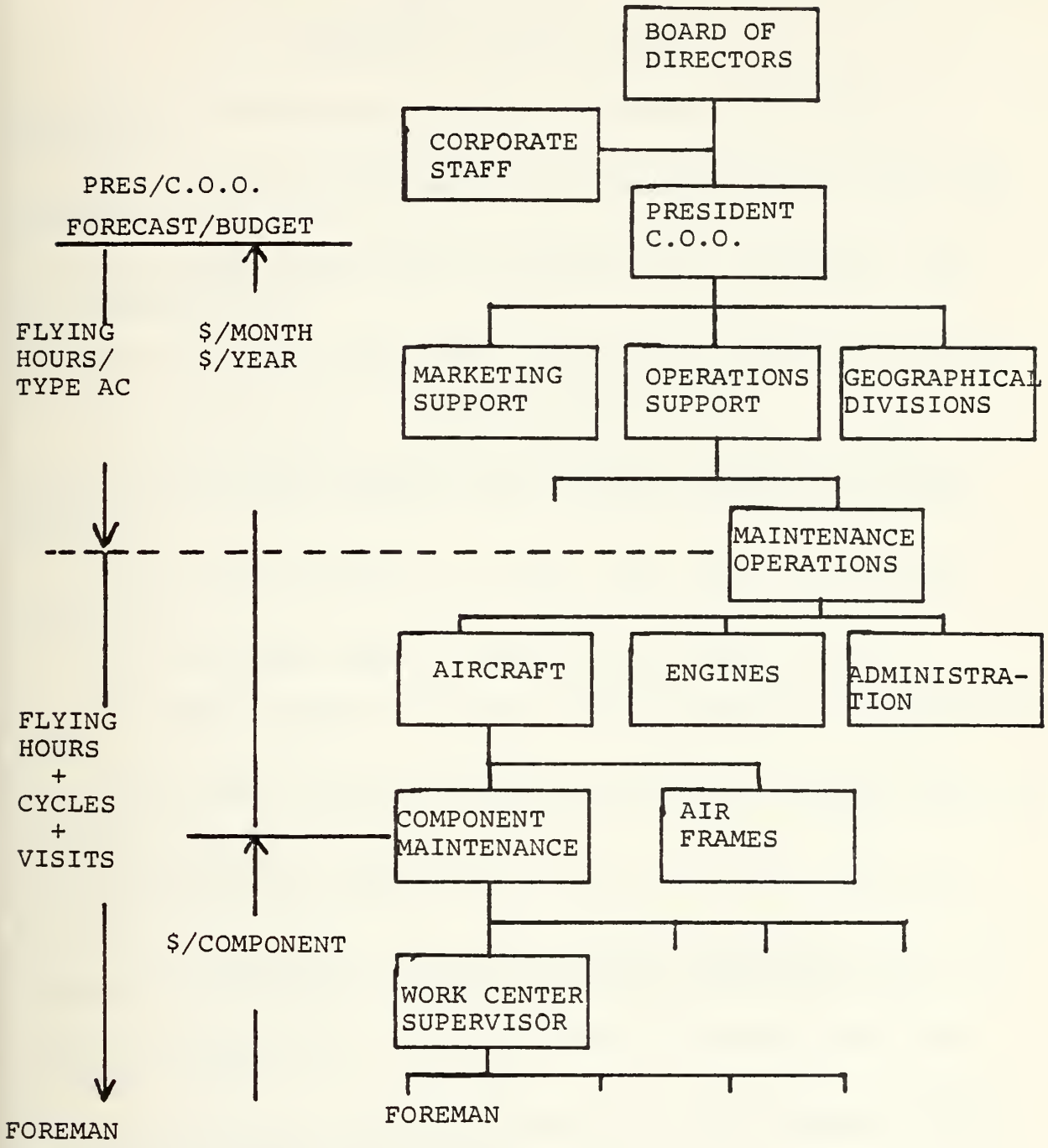


EXHIBIT 30

COMMERCIAL AIRLINE SURVEY

1. How is performance relative to budget execution measured?

2. How is budget performance data communicated to the cost centers?

3. Are fiscal performance standards set? by whom? how? how communicated?

4. How often are the fiscal performance standards revised?

5. Who conducts the variance analysis?

6. What information relative to the maintenance budget is passed to the cost centers, the activity manager and headquarters?

7. What is the activity's output from using the dollars budgeted?

8. Is the output tied in any fashion to the input?

9. Is there a means to measure maintenance dollar effectiveness?

10. How is the activity measured by the next higher level of management?

11. What data are submitted to that next higher level of management?

12. Is it difficult to upwardly adjust the budget if costs exceed expectations? Who provides the justifications?

13. How is internal review involved in managing the maintenance budget?

14. What problems exist in managing the maintenance budget and the maintenance function?

VIII. COMPARISONS, CONCLUSIONS AND RECOMMENDATIONS

A. GENERAL

This chapter is divided into three sections. The first section compares and contrasts the United States Navy Aviation Fleet Maintenance (AFM) funds program and the Commercial Airline funds maintenance program. The second section provides conclusions with respect to AFM financial control and management control systems. The last section proposes several recommendations developed from the review and understanding of the control system model, the environment and the surveys.

B. MAINTENANCE FUNDS CONTROL: UNITED STATES NAVY AND COMMERCIAL AIRLINES

1. General

The United States Navy and the Commercial Airline perform most of their own internal aircraft maintenance functions. Both organizations have built expensive, elaborate and large maintenance facilities for accomplishing maintenance. These maintenance facilities are located throughout the world, corresponding with flight operations.

Another similarity between the United States Navy and the Commercial Airline is the costing method used for funding the aircraft maintenance repair costs. Instead of using a transfer cost method, both organizations fund maintenance through an expense costing method.

The expense cost method allocates a budget to the maintenance activity financing the aircraft maintenance program. Under expense costing the aircraft operating division does not pay a reimbursable cost to the maintenance division for maintenance repair. In effect, aircraft maintenance is a free good for the aircraft operator, paid for by the expense budget allocated to the maintenance activity.

The key difference between the United States Navy and the Commercial Airline is the profit element. The Commercial Airline operates within the profit making arena. The United States Navy operates not for profit but to maintain a predetermined readiness posture. Another difference is that the Commercial Airline is capable of accurately predicting flight schedules and aircraft equipment requirements. Although the United States Navy forecasts total annual flight hour requirements, the large fleet of aircraft makes it difficult for the United States Navy to estimate flying statistics for a specific aircraft. In contrast, the Commercial Airline with a smaller aircraft inventory and established scheduled flying routes is able to accurately predict specific aircraft flight requirements. For example, the Commercial Airline forecasts the total number of take-offs and landings that each aircraft will perform during the budget year. The final major difference between the United States Navy and the Commercial Airline is the sophistication and design characteristics among the type aircrafts.

2. Budget Development

The United States Navy AFM budget is developed from the historical maintenance cost per hour for type aircraft. The Commercial Airline maintenance budget is developed from the historical maintenance cost data base and forecasted component failure. The United States Navy AFM budget is determined based on the Primary Mission Readiness (PMR) and cost per hour for type aircraft computation performed at the Chief of Naval Operations (CNO) staff assistant level without input from the lower echelon commands. No dialogue exists between the CNO level and the aircraft maintenance activity. In contrast, the Commercial Airline maintenance budget is a negotiated instrument developed from the bottom-up.

The Commercial Airline budget is the product of the company's line managers who are responsible for the maintenance function. In addition, the Commercial Airline maintenance budget is based on the cost to repair a specific number of component parts. By developing the Commercial Airline budget from the estimated number of component repairs rather than historical flight hour costs, the Commercial Airline attempts to capture the specific known costs of aircraft maintenance. The Commercial Airline maintenance budget includes both the cost of materials and labor services. The United States Navy AFM budget includes only material costs.

The highlights of the budget development process differences are the cost elements included in the respective

budgets; the Commercial Airline managers direct involvement in the budget process versus the United States Navy CNO centralized budget process; and the budget estimate derivation methods, flight hours or component repairs.

In summary, the Commercial Airline budget process is decentralized throughout the line of management authority emphasizing budget estimates based on specific component repairs. The United States Navy budget process is highly centralized and based on average flight hour costs for type aircraft.

3. Budget Approval

The system for reviewing and approving the maintenance budgets differ significantly. The United States Navy AFM budget development cycle takes eighteen to twenty months from initial budget formulation to Congressional approval. In comparison, the Commercial Airline budget process takes eight months. The shorter time schedule allows the Commercial Airline to react more rapidly to changes in economic conditions, industry competition and internal company goals. In contrast, the longer United States Navy budget cycle is driven by the interaction of the political process.

The Commercial Airline maintenance budget is endorsed by successive superior line managers and submitted for approval to the Chief Operating Officer at the corporate headquarters. Once the budget is approved it remains set for the year. Budget changes are made if the adjustment is required to correct

unexpected spending variances. In general, it is not difficult to adjust the approved maintenance budget if the events require it. In contrast, the United States Navy AFM budget is a segment of the Operation and Maintenance, Navy (O&MN) appropriation, and adjustments within the appropriation can be made by the CNO staff assistants. Additional funding requirements exceeding the funding ceiling established by the Congressional Appropriation legislation can only be obtained from supplemental Congressional Appropriation legislation.

4. Budget Performance Measurement

The United States Navy measures AFM funds performance through aircraft readiness. Although no specific link exists that correlates dollars expended for maintenance and the availability of ready aircraft, a probable link exists. The Commercial Airline measures maintenance funds performance through budget variances between the planned expenses and actual costs. Variances between the budget estimate and actual performance data are carefully monitored, analyzed and reviewed. The measurement criterion at the Commercial Airline is how well the budget was executed.

The Commercial Airline has designated an individual, the maintenance line foreman, to be responsible for budget execution. The evaluation of the foreman's budget performance is a significant benchmark contributing to future promotion opportunities and financial bonus incentives. The United States Navy also evaluates the performance of responsible AFM

financial managers but the two evaluation techniques are not equivalent. The United States Navy performance evaluation system is an annual evaluation of an individual's performance. The performance reports evaluate several categories including leadership, judgement, resource management, appearance and behavior. In contrast, the Commercial Airline evaluates their maintenance foreman directly on budget execution performance.

The difference between the two evaluation methods is significant. The contrast exists because the Commercial Airline's organizational structure is designed for the purpose of holding individuals directly responsible for their actions. The United States Navy is less structured and responsibility is fragmented.

Both organizations collect financial data through job order costing systems. The Commercial Airline cost reports are detailed at the lower operating levels and summarized for top management review. The United States Navy Resource Management System (RMS) accounting system and Flight Hour Cost Report (FHCR) are designed to report cost data to Senior Naval Officers and Civilian Managers and eventually to Congress.

Performance standards are easily defined by the Commercial Airline. The budget is the benchmark that performance is measured against. The United States Navy has difficulty defining a performance measurement. A variety of standards

are used including obligation rates, aircraft readiness statistics, and the number and dollar value of undelivered orders.

Both organizations have difficulty defining efficiency and effectiveness as related to maintenance funds management.

Internal Review at the NAS is one method that the United States Navy attempts to improve financial operations. In contrast, the Commercial Airline uses Internal Review functions for fraud and theft discovery and prevention.

5. Summary

The significant difference between the United States Navy and the Commercial Airline is the elements used to build the budget. The Commercial Air Line links the cost of maintenance to the number of forecasted components that require maintenance action. In contrast, the United States Navy estimates the annual flight hours required to maintain a readiness level and assigns a cost for maintenance based on the average historical maintenance cost for each flight hour.

C. CONCLUSIONS

An objective of this thesis was to review the United States Navy AFM funds control system to determine if the system provided an adequate control structure. The defined financial structure captures source aviation maintenance costs for RMS accounting. However, cost summation is only a portion of the total control system, an effective funds control system also includes the factors of the thesis control model. The absence of total line management involvement in the budget

process, a lack of performance standards and variance reviews penalizes the United States Navy.

1. AFM Funds Control: Strengths

The United States Navy AFM funds control system's greatest strength is that it is an established control system. AFM funds management at the NASs is diversified but each NAS has a workable system for financial and management control. The RMS cost collection system is the common link that correlates the maintenance cost data. The standardized cost summation method is an essential element for budget formulation.

The centralized budget development process is another essential AFM funds control element. Through the coordination of the CNO staff, the AFM budget is estimated based on flight hours necessary for maintaining aircraft crew readiness and the historical maintenance cost per hour.

The AFM funds control system is designed for centralizing the reporting of type aircraft maintenance costs. The centralized cost data management information system collection network links cost summation with type aircraft diversity and aircraft location dispersion.

2. AFM Funds Control: Weaknesses

The significant weaknesses of the United States Navy AFM funds control system are discussed with respect to the control model presented in Chapter II. The key factors of the control model are a total system model, goal congruence, a financial control structure, variance review and line manage-

ment attention.

a. Total System Involvement

The United States Navy AFM funds control system lacks a total system involvement. Budget development is a centralized process at the CNO staff level without direct input from the operating activities. Indirect budget inputs are provided by the NASs in the form of maintenance cost RMS information; however, the NAS AFM funds administrator is not involved in budget formulation. Additionally, the Type Commander has little involvement in the AFM budget process. AFM budget formulation is centralized without participation by the Type Commander and NASs.

The lack of budget formulation involvement by the Type Commander and NASs has an overall negative impact. The total funds control system discourages management incentives because the funding requirements are determined from above without dialogue from the operating activities. Budget process involvement by the AFM funds administrators is an essential element for successful funds control systems.

The Commercial Airline Management by Objectives (MBO) technique incorporates direct management involvement throughout the line of management authority. By involving each management level in the budget formulation process, budget development is understood resulting in better execution. The United States Navy AFM funds control system lacks a complete system that emphasizes this total involvement.

b. Measurement Goals

AFM budget execution and performance measurement goals are not established by either the Type Commander of NASs. An unwritten goal is the requirement that an activity obligate its total AFM funds prior to the end of the fiscal year; but, there are no other established AFM funds performance measurement goals. The lack of goals is a weakness of the AFM funds program.

Uniform standards are essential for internal management performance analysis. An important keystone within an organization, goals should define the objectives that the organization is attempting to achieve. If there is only a vague and confused picture of goals, an organization may stray from the most direct route to success. There is a danger of muddling through the process.

Profits are a clear objective; but, the United States Navy operates in a not for profit environment. The AFM funds program is a service objective, emphasizing maintenance repair. Exact and specific internal objectives for AFM funds performance are missing. The absence of explicit AFM funds objectives creates inconsistency, lack of coordination and inefficiency.

c. Variance Review

The function of controlling assumes the existence of some type of target or objective. Without predetermined goals and objectives, comparison of actual performance with

standard performance is impossible. The United States Navy AFM funds control model lacks standard performance reviews.

Several NASs have local variance reviews, comparing expected obligation rates with actual performance. Local NAS management reviews are not a substitution for United States Navy directed reviews. Variance analysis must be designed to supplement performance monitoring and goal accomplishment.

d. Financial Structure

A weakness of the RMS financial system is that it is tailored for reporting summation maintenance cost information to senior United States Navy management. The RMS financial system is supportive of the centralized AFM budgeting technique. The financial structure ignores the information requirements of the NAS AFM funds administrator because the system emphasizes obligational costs for budget formulation rather than a complete cost accounting system. The financial structure does not attempt to match the accounting process with the individual AFM funds administrator's responsibility.

e. Line Management

It is generally considered sound budgetary practice to get budget preparation into the hands of line management, even down to the lowest level of supervisors. There are several reasons for attempting to do this. For one, the support of managers for the budgetary program is dependent upon their understanding and acceptance of it as being realistic. If managers have a hand in formulating a budget,

there is less chance it will be viewed as something forced upon them. Furthermore, most managers are in position of knowing more about their operations than anyone else.

The United States Navy limits line management involvement. As an autocratic formulation, AFM budgeting isolates the AFM funds administrators from the formulation process. They lose incentive when executing the budget because there is no involvement on their part.

3. Summary

The United States Navy AFM funds program is managed on two separate levels. The first level is the centralized budget formulation process at the CNO staff level. The second level is the budget execution process at the NASs. Neither level manages AFM funds as a total system. The NAS emphasis is on the obligational rate and the CNO emphasis is on the budget development.

The AFM budget process and funds control management system do not define performance objectives and goals. The AFM budget is developed based on partial computation stressing aircraft readiness; however, AFM budget execution does not correlate aircraft readiness and funds obligational performance. The absence of formal goals and objectives allows each NAS freedom to select a management control system that suits their needs. The interlinking thread that is needed to fully coordiante the AFM funds program is a set of goals, implemented through standardized procedures, NAS

involvement in budget decision making, and feedback as to goal accomplishment.

D. RECOMMENDATIONS

The primary objectives of this thesis were to evaluate the United States Navy AFM funds control system, to review and compare the United States Navy and the Commercial Airline's maintenance funds control system and to recommend improvements for the United States Navy AFM funds control system. As discussed in Part C of this chapter, the United States Navy AFM funds control system has been evaluated by the authors as workable. Specifically, the current AFM funds control system does offer several advantages; however, significant weaknesses do exist. The contributions of this thesis are the following recommendations for improvement.

1. Responsibility

The AFM funds administrators performance evaluations should be more closely linked to AFM budget execution. At the NAS, legal financial responsibility should be delegated to the cost centers' funds administrators. Through providing direct performance evaluations based on resource management, a natural incentive for AFM funds control improvement should develop. It is essential that responsibility be evaluated by tying budget execution to performance.

2. Budgeting

The AFM budget formulation process should be supplemented by inputs from the NAS AFM funds administrators and

the Type Commanders. The current AFM budget formulation process by the CNO staff is a sound centralized financial management program. The authors believe that complementing the CNO budget process with lower command level inputs should improve the budget process. Specifically, through involving AFM funds administrators in the budget process a sense of budgetary understanding should develop. Additionally, total line management involvement in budgeting should consolidate the overall team effort.

NAS budget inputs should be twofold. First, the NAS surveys indicated that 6% of the total NAS AFM funds grant is used by the Supply Department for providing inexpensive consumable items. These items are provided free of charge to the Aviation Intermediate Maintenance Department (AIMD) for use during the intermediate maintenance function. The authors propose that the NAS AFM funds administrators forecast the consumable items dollar requirements for inclusion in the AFM budget formulation process.

Secondly, the NAS surveys indicated that 47% of the total NAS AFM funds grant is used by the AIMD for financing intermediate maintenance. This maintenance includes direct repair to aircraft and repair to component assemblies. Using the currently available Maintenance Data Collection system statistical reports, the authors propose that the AFM funds administrators forecast the costs of both component repairs and aircraft repairs. These cost estimates should improve

the realism of the AFM budget formulation process.

By including local activity budget estimates, two direct benefits are incurred. First, the AFM funds administrator becomes involved in the budget process. Second, the AFM budget process is decentralized slightly, improving future budget estimates and establishing budget communications throughout the budget formulation and execution lines of authority.

3. Performance Measurements

Objectives provide a focus for policy making and for management decisions. The lack of specific AFM performance measurement objectives is a weakness of the AFM funds control system. The authors propose that specific objectives be defined. For instance, in addition to established obligation expenditure rates and undelivered order aged reviews, performance objectives are needed for monitoring cost center obligation rates and AFM maintenance cost per hour trends for type aircraft. Target costs per aircraft could be generated as guidelines for the NASs.

4. Operating Procedures

A majority of the NASs expressed a need for formal standard operating procedures. The authors agree that uniform procedures standardizing the control functions at the activity level are needed. Specific Type Commander direction is needed standardizing cost center memorandum accounting records, financial edit responsibilities, internal record verification, variance reviews and internal review functions.

The internal review function should be expanded to include management control and efficiency and effectiveness audits.

5. Financial Structure

The RMS financial structure does not provide the AFM funds administrator funds control reports that are useable at the activity level. The authors propose that the cost accounting system be modified to provide AFM funds administrators and cost centers funds managers timely and more descriptive financial information. The detailed financial transaction information is needed if NASs are to perform variance reviews, performance analysis and management control.

E. FUTURE THESIS TOPICS

During the research on this thesis, a number of related topics were found that the authors have concluded would be excellent topics for future thesis research. They are:

1. Survey of United States Navy AFM funds control systems at overseas activities and on aircraft carriers.

2. What methods are available for correlating AFM funds budget execution and aircraft readiness.

3. The development of standardized AFM control procedures for NASs.

4. Are AFM maintenance costs correctly summarized and reported on the Flying Hour Cost Report (FHCR).

5. What management control improvements can Internal Review make from examining AFM funds programs.

APPENDIX A

GLOSSARY OF FINANCIAL MANAGEMENT TERMS

Allocation - An authorization by a designated official of a component of the Department of Defense making funds available within a prescribed amount to an operating agency for the purpose of making allotments; i.e., the first subdivision of an apportionment.

Allotment - An authorization granted within and pursuant to an allocation for the purpose of incurring commitments, obligations, and expenditures in the accomplishment of an approved budget. Therefore, an allotment is a subdivision of an appropriation which provides the funding authority for an official to accomplish a specific function or mission.

Apportionment - A determination by the Office of Management and Budget as to the amount of obligations which may be incurred during a specified period under an appropriation, contract authorization, other statutory authorizations, or a combination thereof. An apportionment may relate either to all obligations to be incurred during the specified period within an appropriation account or to obligations to be incurred for an activity, function, project, object or combination thereof.

Appropriation - An appropriation is an annual authorization by Act of Congress to incur obligations for specified purposes and to make payments out of the Treasury. Appropriations are subdivided into budget activities, sub-heads, programs, projects, etc.

Annual Appropriation - Also known as one-year appropriations. This appropriation is generally used for current administrative, maintenance, and operational programs, including the procurement of items classified as "expense." These appropriations are available for obligation for one fiscal year and for expenditures for two additional years. This additional two year period for expenditure may be extended by Congress. At the end of the three year period of availability, or such other period as approved by Congress, any unexpended balance in an annual appropriation is transferred to the designated successor or "M" account.

Appropriation Sponsor - DCNO or a Director of a Major Staff Office charged with supervisory control over an appropriation.

Approved Programs - Resources or data reflected in the latest DNFYP as modified by subsequent Program Change Decisions (PCDs), Program/Budget Decisions (PBDs), other Secretary of Defense decisions, or below-threshold changes approved by the head of a DOD Component.

Budget - A planned program for a fiscal period in terms of (a) estimated costs, obligations, and expenditures, (b) source of funds for financing, including reimbursements anticipated, and other resources to be applied, and (c) history and workload data on the projected programs and activities.

Budgeting - The process of translating approved resource requirements (Manpower & Materiel) into time-phased financial requirements.

Commitment - A firm administrative reservation of funds, based upon firm procurement directives, orders, requisitions, authorizations to issue travel orders, or requests which authorize the recipient to create obligations without further recourse to the official responsible for certifying the availability of funds. The act of entering into a commitment is usually the first step in the process of spending available funds. The effect of entering into a commitment and recording of that commitment on the records of the allotment is to reserve funds for future obligations. A commitment is subject to cancellation by the approving authority to the extent that it is not already obligated.

Department of the Navy - It is composed of the executive part of the Department of the Navy; the Headquarters United States Marine Corps; the entire operating forces, including naval aviation, of the United States Navy and of the United States Marine Corps, and the reserve components of those operating forces; and all shore (field) activities, headquarters, forces, bases, installations, activities, and functions under the control or supervision of the Secretary of the Navy. It includes the United States Coast Guard when it is operating as a service in the Navy. (United States Code, Title 10, Section 5011.)

Execution - The operation of carrying out a program as contained in the approved budget.

Expenditure - A charge against available funds. They are evidenced by vouchers, claims, or other documents, approved by competent authority. Expenditures represent the actual payment of funds.

Fiscal Guidance Memorandum (FGM) - Annual guidance issued by the Secretary of Defense which provides the fiscal constraints that must be observed by the JCS, the Military Departments, and Defense Agencies, in the formulation of force structures and Five Year Defense Programs, and by the Secretary of Defense staff in reviewing proposed programs.

Five Year Defense Program (FYDP) - The official program which summarizes the Secretary of Defense approved plans and programs for the Department of Defense. The FYDP is published at least once annually. The FYDP is also represented by a computer data base which is updated regularly to reflect decisions.

Forces - Broadly, the fighting elements (combatant) of the over-all defense structure; units, equipment; etc., shown in the Five Year Defense Program (FYDP).

Force Levels - Number of aircraft, ships and other forces that are required to accomplish assigned tasks or missions. Normally identified by specified aircraft model, ship type, Marine divisions; etc.

Force Sponsor - The CNO/CMC official (normally at the DCNO level within OPNAV) designated as responsible for the preparation, substantiation, and justification of a Navy position on the level, composition and related direct support for a force category.

Information System - The network of all communication methods within an organization. It includes information exchanges upward, downward, or laterally to accomplish the objectives of the organization as well as information fed back to be used in management appraisal, progressing, controlling, scheduling, planning and also in replanning, rescheduling and other phases, to assure the appropriate end result.

Joint Force Memorandum (JFM) - A document prepared annually by the JCS and submitted to the Secretary of Defense which provides recommendations on the joint force program within the fiscal guidance issued by the Secretary of Defense.

Joint Strategic Objectives Plan (JSOP) - A document prepared annually which provides the advice of the Joint Chiefs of Staff to the President and the Secretary of Defense on the military strategy and force objectives for attaining the national security objective of the United States. In addition to recommendations on major forces, it includes the rationale supporting the forces and assessment of risks associated therewith, costs and manpower estimates, and other supporting data.

Major Mission Sponsor - The CMC, a DCNO or a Director of a major staff office who is designated as responsible for determining objectives, time phasing and support requirements and for appraising readiness and capability to fulfill the assigned mission.

Mission - The objective; the task, together with the purpose; which clearly indicates the action to be taken and the reasons therefore.

Navy Department - Includes the offices of all members of the executive administration of the Department of the Navy; these organizationally comprise the Office of the Secretary of the Navy, the Office of the Chief of Naval Operations, and the headquarters organizations of the United States Marine Corps, the Naval Material Command, the Bureau of Naval Personnel, the Bureau of Medicine and Surgery, the Office of the Comptroller of the Navy, the Office of the Judge Advocate General, the Office of Naval Research, the offices of Staff Assistants to the Secretary, and the United States Coast Guard when it is operating as a service in the Navy.

Objective - A goal, expressed as that portion of the "what," "when," and "where," of a requirement which is reasonably feasible of attainment within the expected availability of the resources of men, money, and technological capability.

Obligation - The amount of an order placed, contract awarded, service received, or other transaction which legally reserves a specified amount of an appropriation or fund for expenditure.

Plan - The required actions or capabilities needed to accomplish a mission.

Program Budget Decision (PBD) - A Secretary of Defense decision in prescribed format authorizing changes to a submitted budget estimate and the FYDP.

Program Change Decision (PCD) - A Secretary of Defense decision, in prescribed format authorizing changes to the Five Year Defense Program.

Program Change Request (PCR) - Proposal in prescribed format for out-of-cycle changes to the approved data in the Five Year Defense Program.

Program Element - A description of a mission by the identification of the organizational entities and resources needed to perform the assigned mission. Resources consist of forces, manpower, material quantities, and costs, as applicable. The program element is the basic building clock for the FYDP.

Program Decision Memorandum (PDM) - A document which provides decisions of the Secretary of Defense on POMs and the JFM.

Program Element Sponsor - The DCNO or Director of a Major Staff Office who is responsible for force composition, funding support, and programmed manpower for a specific Program Element. He is responsible for objectives and planned programs for the out-years, as well as for the development of Program Change Requests (PCRs).

Program Objectives Memorandum (POM) - A memorandum in prescribed format submitted to the Secretary of Defense by the Secretary of a Military Department or the Director of a Defense Agency which recommends the total resource requirements within the parameters of the published Secretary of Defense fiscal guidance.

Program Sponsor - The DCNO or Director of a Major Staff Office who, by organization charter, is responsible for determining program objectives, time-phasing and support requirements, and for appraising progress, readiness, and military worth for a given weapon system, function or task.

Programming (DOD Programming System) - The process of translating planned military force requirements into time-phased manpower and material resource requirements.

Project - A planned undertaking having a finite beginning and ending, involving definition, development, production, and logistic support of a major weapon or weapon support system or systems. A project may be the whole or a part of a program. Within the NMC, a Designated Project is a project which, because of its importance or critical nature, has been selected for intensified project management.

Report - Any transmission (presentation) of data or information, on a one-time, recurring, regular, periodic, or as required basis, whether in oral or written narrative, tabular, graphic, questionnaire, punched-card, tape, or other form regardless of method of preparation or transmission.

Reporting System - The flow of information, including the procedures and methods for preparing, transmitting, and using, which serves an integrated information system; a management information system, or a portion of a system or other operation.

Resource Category - A unique type of resource or a homogeneous grouping of related resources. The sum of all resource categories equals the total resource input to the FYDP.

Resource Input - Assets which comprise a resource category. A resource category may be comprised of many or few resource inputs.

Resource Management System - The Department of Defense resource management systems include all recurring quantitative (i.e., financial and non-financial) data used at all management levels within the Department of Defense for planning and controlling the acquisition, use and disposition of resources. Such systems include but are not limited to the following:

a. Programming and budgeting systems.
b. Systems for management of resources for operating activities.
c. Systems for management of inventory and similar assets.
d. Systems for management of acquisition, use and disposition of capital assets.

Strategic Guidance Memorandum (SGM) - A Secretary of Defense Memorandum which establishes the strategic framework objectives for programming and budgeting phases of the PPBS.

OPERATING BUDGET
57012A

ATLANTIC FLEET ..CCOUNTING DATA TABLES

Issues to aviation operating forces as defined in paragraph 4100-1-2 - Authorized Accounting Activity 61753 FAAOLANT

Material or Services	Use	Fund Code			Remarks
	AVIATION FLEET MAINTENANCE	Subhead 601E	Subhead 602E	Subhead 603E	Subhead 608E
Paints, wiping rags, towel service, cleaning agents and cutting compounds	Used in preventive maintenance and corrosion control of aircraft	2N/2J	7L/2K	2P/2L	7M/2M
Consumable repair parts and miscellaneous material	NSA material used in direct maintenance of aircraft, drones, targets, component repair or related ground support equipment (GSE)*	2N/2J	7L/2K 9D/9E	2P/2L	7M/2M
Pre-binned material	Pre-expended, consumable maintenance material meeting requirements of NAVSUP P-485, used in maintenance of aircraft, aviation components, (GSE)*, etc.	2N/2J	7L/2K	2P/2L	7M/2M
Aviation fuels and lubricants	POL used in test and check of aircraft engines during engine build-up, change or during maintenance. (Intermediate level only)	2N	7L	2P	7M
Allowance list items NAVAIR 0035QH series	Only items used strictly for maintenance such as aprons, impermeables; coveralls, explosive handlers; face shields, industrial; gloves, leather gas welders; goggles, industrial; non-prescription safety glasses	2N/2J	7L/2K	2P/2L	7M/2M
Fuels	Used in related GSE.* (Shipboard only)	2N/2J	7L/2K	2P/2L	7M/2M
Test bench equipments	Replacement of components used in test bench repair and rotable pools	2N	7L	2P	7M

*NOTE: The term "Ground Support Equipment (GSE)" is to exclude Consolidated Onboard Ship's Allowance List (COSAL) and Mobile Equipment Allowance List (MEAL) listed support equipment. The aviation fleet maintenance funds are to be used to support only the ground support equipment (GSE) listed in the Individual Material Readiness List (IMRL).

Source: NAVSO P-3013.2

ATLANTIC FLEET ACCOUNTING DATA TABLES

Issues to aviation operating forces as defined in paragraph 4100-1-2 - Authorized Accounting Activity 61753 FAAOLANT

Material or Services	Use	Fund Code			
	AVIATION FLEET MAINTENANCE	Subhead 601E	Subhead 602E	Subhead 603E	Subhead 608E
Aircraft loose equipment	Maintenance or replacement of aircraft loose equipment list in the aircraft inventory record.	2N/2J	7L/2K	2P/2L	7M/2M
Hand Tools	Consumable hand tools used in the readiness and maintenance of aircraft, maintenance and repair of componenta and related support equipment	2N/2J	7L/2K	2P/2L	7M/2M
Safety/flight deck shoes	Used in maintenance shops.	2N/2J	7L/2K	2P/2L	7M/2M
Repair and maintenance	Repair and maintenance of flight clothing and pilots/crew equipment	2N/2J	7L/2K	2P/2L	7M/2M
DECALS	Restricted to decals used on aircraft	2N/2J	7L/2K	2P/2L	7M/2M
Allowance list	Replacement of consumable special tools and IRML allowance list items	2N/2J	7L/2K	2P/2L	7M/2M
Packing and preservation	Items consumed in interim packaging/ preservation of Aviation Fleet Maintenance repairables	2N/2J	7L/2K	2P/2L	7M/2M
Forms and publications (COG 11)	MAFS, MAF Bags, equipment condition tags, publications, etc., used in support of direct maintenance of aviation components or aircraft	2N/2J	7L/2K	2P/2L	7M/2M
Special clothing	Authorized special purpose clothing for unusually dirty work while performing maintenance on aircraft	2N/2J	7L/2K	2P/2L	7M/2M
Civilian labor	Civilian labor used in direct support of aviation fleet maintenance (requires TYCOM approval prior of utilization)	N/A		As chargeable by station	

TABLE IV

ATLANTIC FLEET AVIATION FUND CODES

Service Designator Code	Appropriation and Subhead	Authorization Accounting Activity	Operating Budget
V	17_1804.60*E	61753	57012A

Purpose	Subhead 601E Fund Code	Subhead 602E Fund Code	Subhead 603E Fund Code	Subhead 608E Fund Code
Flight Operations:				
Aircraft fuels, (JP/AVGAS)	7A	7B	7C	n/a
Aircraft oil/lubricants/fuel additives	9H	9J	9K	n/a
NSA Material, Other (includes shock lubricants and bearing greases)	7E	7F	7G	n/a
Civilian Personnel Support	n/a	7H	n/a	n/a
Fleet Aviation Maintenance				
NSA material, including POL, used in intermediate maintenance of aircraft	2N	7L	2P	7M
NSA material, including POL, used in organic maintenance of aircraft	2J	2K	2L	2M

APPENDIX C

DEPARTMENT OF THE NAVY
COMMANDER NAVAL AIR FORCE
UNITED STATES ATLANTIC FLEET
NORFOLK, VIRGINIA 23511

COMNAVAIRLANTINST 7310.5F
CNAL 534B
6 MAR 1980

COMNAVAIRLANT INSTRUCTION 7310.5F

Subj: Aviation Fleet Maintenance Funds; instructions concerning

Ref: (a) COMNAVAIRLANTINST 7310.1Q
(b) NAVSO P-3013
(c) OPNAVINST 7310.1C
(d) COMNAVAIRLANTINST 4430.1H (R
(e) OPNAVINST 4790.2B
(f) COMNAVAIRLANTINST 7310.6A (A
(g) COMNAVAIRLANTINST 4440.15A (A

Encl: (1) Applications of Aviation Fleet Maintenance Funds
(2) Budgeting and Reporting of Aviation Fleet Maintenance Funds (R
(3) Financial Management Improvement Program (A

1. Purpose. To promulgate instructions concerning the administration of subject funds.

2. Cancellation. COMNAVAIRLANTINST 7310.5E (R

3. Scope. Applicable to all activities to which Aviation Fleet Maintenance (AFM) funds are allocated by Commander Naval Air Force, U. S. Atlantic Fleet, and to those activities receiving maintenance support from subject funds.

4. Background. COMNAVAIRLANT receives Flying Hour Program funds for flight operations and aviation fleet maintenance. Flying hour funds are allocated to users for costs incurred in the operation and maintenance of aircraft in the reporting custody of NAVAIRLANT activities. Regulations and procedures regarding flight operation funds are provided in reference (a). Generally, AFM funds pay for the costs of chargeable material used in the performance of organizational and intermediate levels of aircraft maintenance. Enclosure (1) provides detailed information regarding purpose of AFM funding as specified by reference (b). Procedures for budgeting and reporting AFM funds obligations are outlined in references (a), (b) and (c) and summarized in enclosure (2). Guidelines for improving AFM financial management are highlighted in enclosure (3).

5. Action. Activities receiving AFM funds granted by COMNAVAIRLANT shall comply with the provisions of enclosures (1) through (3).

APPLICATION OF AFM FUNDS

1. Purpose of Funds

a. AFM funds are end-use money used to buy consumable aviation parts and maintenance material from local inventories or directly from other military/commercial suppliers. More precisely, AFM funds are expended for the purchase of Navy Stock Account (NSA), Defense Logistics Agency (DLA) and General Services Administration (GSA) material and supplies consumed in the performance of aviation organizational and intermediate levels of maintenance. AFM expenses are a direct result of requisitions submitted for these materials, which are subsequently delivered from inventory or received on a direct turnover basis from a supplying agency.

b. AFM funds will finance the cost of the following:

Material or Services	Use
Paints, wiping rags, towel service, cleaning agents and cutting compounds	Used in preventive maintenance and corrosion control of aircraft.
Consumable repair parts and miscellaneous material	NSA/DLA/GSA chargeable material used in direct maintenance of aircraft, repair of related ground support equipment (GSE). See GSE definition, paragraph 1c below.
Pre-binned material	Pre-expended, consumable maintenance material meeting requirements of NAVSUP P-485, used in maintenance of aircraft, aviation components, GSE, etc.
Aviation fuels and lubricants	POL used in organizational/intermediate maintenance of aircraft. (R
Allowance list items NAVAIR 0035QH series	Only items used strictly for maintenance, such as aprons, impermeables, coveralls, explosive handlers, face shields, industrial gloves, leather gas welders, goggles, industrial, nonprescription safety glasses.
Fuels	Used in related GSE (shipboard only).
Test Bench Components	Replacement of components used in test bench repair and rotable pools.

Enclosure (1)

Aircraft Loose Equipment	Maintenance or replacement of aircraft loose equipment listed in the aircraft inventory record.
Hand Tools	Consumable hand tools used in the readiness and maintenance of aircraft, maintenance and repair of components and related support equipment.
R) Safety/Flight Deck Shoes,	Used in maintenance shops and with Aviation Maintenance Support Equipment (AMSE) or when required for use on flight deck during flight operations by maintenance personnel. Safety shoes are an authorized AFM expense for Navy enlisted personnel, officers and chief petty officers, as noted in reference (d) and as further clarified by COMNAVAIRLANT Norfolk VA msg 301342Z Oct 1979.
Repair and Maintenance	Repair and maintenance of flight clothing and pilots/crew equipment.
Decals	Restricted to decals used on aircraft.
Allowance List	Replacement of consumable special tools and Individual Material Readiness List (IMRL) allowance list items.
Packing and preservation material	Items consumed in interim packaging/ preservation of aviation fleet maintenance repairables.
Forms (COG 1I)	MAFs, MAG Bags, equipment condition tags and 1I COG forms, publications, etc., used in support of direct maintenance of aviation components or aircraft.
Special Clothing	Authorized special purpose clothing for unusually dirty work while performing maintenance of aircraft.
Civilian Labor	Civilian labor only when used in direct support of aviation fleet maintenance. This requires TYCOM approval prior to utilization.

The above costs are legitimately incurred by NAVAIRLANT activities in support of:

(1) Aircraft in reporting custody of NAVAIRLANT units

(2) Transient aircraft (except those in the reporting custody of Reserve, Training Command, or Air Force activities)

(3) Aircraft components used in the training of NAVAIRLANT units by Naval Air Maintenance Training Detachment or Fleet Aviation Specialized Operational Training Group, Atlantic Fleet.

(4) Naval Air Force, U. S. Pacific Fleet units assigned to NAVAIRLANT carriers or stations

(5) Fleet Marine Force, Atlantic units assigned to NAVAIRLANT carriers or stations, or the LANTFLT LPHs/LHAs

c. Definitions. The following definitions are provided for application to this instruction:

(1) Consumable (expense) materials - Materials for which a standard depot level rework program has not been established. This definition may include items which are repairable at the intermediate or organizational level (wing tips, avionics racks), in addition to those items obviously consumable and not capable of reuse (bulbs, rivets). Consumable maintenance materials categorically require the use of AFM funds.

(2) GSE - As defined by Volume 2, paragraph 1105 of reference (e), GSE provides necessary maintenance support directly to an aircraft weapon system or uninstalled aircraft components undergoing test or repair. Common shop furnishings, fire fighting equipment, fueling trucks and equipment, permanently installed starting and air conditioning systems, and all items not included in the Aircraft Maintenance Material Readiness List (AMMRL) program are excluded from this definition.

d. AFM funds shall not finance the following:

(1) Housekeeping, office supplies, or habitability items (i.e., furniture, cabinets, etc.)

(2) Services such as printing, maintenance, etc.

(3) Prescription safety glasses

(4) General station collateral equipment, including laborsaving devices (TYCOM Section "C" allowance list items) which include but are

not limited to adding machines, copiers, duplicating machines and typewriters

(5) Packing, crating and preservation for storage or shipment (Temporary packing for internal movement of repairables is an authorized AFM expense.)

(6) EAM/ADP equipment and supplies

(7) Operating costs of vehicular and mobile equipment other than shipboard GSE

(8) Non-aviation miscellaneous equipment, even though repair may be performed in the ship's Aircraft Intermediate Maintenance Department, e.g., MB-5, automotive vehicles, crash cranes, deck scrubbers, forklifts

(9) Maintenance of GSE by Public Works Departments or Centers

(10) Modification of airframes or equipments. Technical directives requiring the local requisitioning of significant chargeable materials for the purpose of modifying or improving assigned airframes or equipments will be funded by Naval Aviation Logistics Center upon submission of a request citing technical directive number, aircraft type, or other system application and total funds required.

(11) Initial outfitting or reoutfitting of IMRL or other allowance list items. These are typically one-time costs not within the AFM budget for routine maintenance, and are funded through the provisions of reference (f). Replacement of such items due to attrition or loss is a proper charge to AFM funds.

(12) Clothing, other than that authorized in paragraph 1b above

(13) Labor, unless specifically authorized by COMNAVAIRLANT

BUDGETING AND REPORTING OF AFM FUNDS

1. Funding Policy. In order to attain optimum use of the combined aircraft operating funds, it is necessary to relate AFM fund usage as closely as possible to the final consumer (reporting custodian). Unplanned or excessive AFM expenses may well result in a decrease in flight operation funds. Requisitioning activities must be made aware of the unnecessary drain on AFM funds caused by duplicate orders or orders for excessive quantities of material, and enjoined to requisition only what is needed when it is needed.

2. Funding Procedures

a. NAVAIRLANT ships; selected Naval Surface Force, U. S. Atlantic Fleet ships (LPHs/LHAs); and the Commanding General, Fleet Marine Force, Atlantic shall be funded by a quarterly AFM Operating Target (OPTAR). Any unused balance will be carried over into the succeeding quarter. AFM funds may not be carried forward into a new fiscal year.

b. NAVAIRLANT shore stations shall be provided AFM funds quarterly by work request (NC 140). The work requests will be amended as aircraft maintenance responsibilities vary from plan through the fiscal year. Stations will submit billings against the work request on Standard Form 1080 to Fleet Accounting and Disbursing Center, U. S. Atlantic Fleet as they occur, with a copy of each SF 1080 forwarded to COMNAVAIRLANT (Code 00322B). Additionally, a NAVCOMPT 2193 (Report on Reimbursable Orders) will be forwarded to COMNAVAIRLANT (Code 00322B) on a monthly basis. (R

c. Non-NAVAIRLANT shore activities hosting permanently assigned or deployed aircraft within COMNAVAIRLANT funding responsibility will be provided work requests for the acquisition of necessary AFM materials.

d. In the event additional AFM funds are required, requests will be submitted on a timely basis in the following format:

(1) COMNAVAIRLANTINST 7310.5F

(2) Additional Funds Required

(3) Unit Identification Code (A

(4) Funds Available for Balance of Quarter

(5) Obligations Incurred FY TD

(6) Complete Justification for Augment Request

e. Shore activities holding AFM funds will assign target amounts for each authorized AFM user (tenant squadron, OMD, AIMD and Supply).

Enclosure (2)

A) (1) The official status of funds will be determined through the recording of transactions in official station accounting records maintained by the Comptroller.

A) (2) AFM funds management will be effected through maintenance of full memorandum OPTAR records. The memorandum records can be maintained by a central point for all users, e.g., Supply Support Center, or by each authorized user as established by local station policy.

A) (3) Memorandum AFM records will be periodically reconciled with official records upon receipt of reports/listings from the station Comptroller in accordance with existing OPTAR procedures. As a minimum, the Comptroller will provide the following reports to the AFM OPTAR recordskeeper(s) for reconciliation purposes:

(a) Detailed Transaction Listing

(b) Detailed Reimbursable Listing - Fund Control Report

(c) Job Cost Status Report

(d) Document Control File Report

3. Reporting Procedures

a. Reference (c) directs COMNAVAIRLANT to submit a consolidated flying hour report to Chief of Naval Operations. To facilitate accomplishment, the following reports are required from activities responsible for administering AFM funds:

(1) NAVAIRLANT Ships: A message report of AFM Budget OPTAR data, prepared in accordance with reference (b), will be submitted to Fleet Accounting and Disbursing Center, Atlantic Fleet with a copy to the type commander. Reports are required to arrive at FAADCLANT no later than the second calendar day of the month following the end of the report month. This report is exempt from MINIMIZE criteria. When the operating unit is in the immediate vicinity of FAADCLANT and during periods of message MINIMIZE, the Budget/OPTAR Report (NAVCOMPT Form 2157) will be prepared and submitted in lieu of the message report no later than the first workday of the month following the report month.

A) Note: Miscellaneous charges not identifiable to a particular aircraft type/model/series will be distributed in accordance with enclosure (2) to reference (c).

R) (2) NAVAIRLANT Shore Stations: The primary report providing necessary AFM funds obligation data is the shore activity Report of Flying Hour Costs (Report Symbol 7310-3A). This message report shall be prepared in accordance with enclosure (2) to reference (a) and submitted

to reach COMNAVAIRLANT, Code 0032 (info FAADCLANT) no later than the 13th of the month following the report month. This report is exempt from MINIMIZE criteria. Include total obligations from memorandum records as a single line entry to ensure completeness of obligational data.

Note: TEC YAAA is authorized to be used for reporting aircraft OMA/IMA expenses not specifically identifiable (such as PEB/AMSE/etc.) to a T/M/S aircraft in accordance with enclosure (2) to reference (a). To ensure the authenticity of miscellaneous charges, sufficient cost centers/job control numbers will be established to properly record aircraft maintenance support costs for each NAVAIRLANT aircraft assigned or in transient status. (R

b. Include a "note" on the BOR/FHCR to clarify questionable data submission. It is essential that accurate costing information be provided to enable COMNAVAIRLANT to predict future funds requirements/ obligations and to ensure validity of CNO budget base. (A

c. Questions regarding funding of maintenance related items not covered in this instruction should be addressed to COMNAVAIRLANT, Code 534 (AUTOVON 690-2657).

FINANCIAL MANAGEMENT IMPROVEMENT PROGRAM

1. Financial Responsibility. Each ship and shore station issued an AFM OPTAR/work request is responsible for efficient and effective funds management, including accurate and timely accounting/reporting. A continuous effort to effectively manage allocated funds must be exerted by all fund holders. Recent reports indicate adverse trends and inefficient management of AFM financial resources. Specific areas of concern are:

a. Approximately one-third of all AFM funds are tied up in unfilled/undelivered orders, many of which are invalid.

b. Excessive adjustments are required due to:

(1) Requisitions not properly obligated on official records

(2) Proper credits not applied for 1RD material repaired and returned to stock

(3) Proper credit not granted for excess material turned into stock

(4) Price changes, cancellations and other adjustments not posted in a timely and proper manner

c. Management responsibility is not specifically designated to a single responsible officer. A single officer must be assigned the overall financial management responsibility.

d. Inadequate attention is paid to AFM funds control/management. The requisition flow/funds obligation process is fragmented and AFM funds status review/management control is marginal.

2. Financial Management Improvements. AFM funds represent a significant portion of the NAVAIRLANT budget. The general perception that AFM funds are unlimited and "free" is invalid. A specific amount of AFM funding is granted to COMNAVAIRLANT which cannot be exceeded by statute. In light of the increased emphasis on fiscal responsibility and dwindling dollar resources, increased emphasis must be placed on the efficient use of AFM funds. AFM fund holders must continually review internal procedures to ensure the efficient and effective management of allocated funds. Individual fund managers must therefore dedicate increased attention to proper utilization of AFM resources. OPTAR/work request holders will ensure that:

a. Authority for local AFM fund management is specifically designated in writing. Normally, the supply officer of afloat units and the comptroller of shore activities exercise primary official responsibility for AFM funds. The commanding officers of NAVAIRLANT shore stations may delegate AFM fund management responsibility, including requirement to maintain memorandum records, to commanding officers/department heads assigned AFM OPTARs.

b. Full memorandum accounting records are being maintained

c. Periodic validation of requisitions is performed in accordance with reference (g) to ascertain:

(1) Material on order is currently required. All requisitions over six months old without positive supply status (those requisitions with status codes BB, BC, BD, BF, BP and BT) with the exception of IMRL replacement items and out of production aircraft items should be cancelled. Afloat units only take up immediate credit.

(2) Propriety of AFM charges

(3) Correct unit of application (necessary to prevent buildup of bench stock)

(4) Maximum utilization of pre-expended bins

(5) Proper technical review of part numbered requests

(6) Proper recording of obligation on official records

d. Unfilled orders are validated in accordance with the parameters set forth in reference (g). This area represents the greatest potential for improving fund management and recouping valuable dollar resources. It must be pursued vigorously throughout the current fiscal year.

e. Internal procedures and responsibilities for the recording of obligations, cancellations, adjustments and credits are viable and effective. For shore stations, the Internal Review Group should establish regular audits in this area to ensure proper financial procedures are being followed.

f. The status of AFM funds is reviewed in a timely manner (i.e., at least monthly) and action taken to constrain obligations and/or request additional funds

g. Authorized funds are not overobligated. This is a serious matter and subject to mandatory statutory regulation. If AFM funds forecast indicates potential overobligation, the OPTAR/work request holder must request a funding increase from COMNAVAIRLANT with detailed justification and develop a contingency plan in event funds are not available.

APPENDIX D

407. AVIATION FLEET MAINTENANCE FUNDS (OFC-50)

1. GENERAL. Aviation Fleet Maintenance funds are provided to finance Navy Stock Account (NSA), Defense Supply Agency (DSA), General Services Administration (GSA), and open purchase materials and supplies consumed in the performance of organizational and intermediate maintenance of aircraft. Specific items which are chargeable to OFC-50 OPTARs are found in TABLE XV of Appendix 11 to reference (a). Items not listed in TABLE XV of reference (a) are to be considered as improper OFC-50 charges unless specific approval to order these items is obtained from COMNAVAIRPAC (Code 019). The following items are specifically not chargeable to OFC-50 funds.

a. Depot level maintenances.

b. Furniture or furnishings.

c. Maintenance or repair of facilities (i.e., cleaning supplies, paints, etc.).

d. Civilian labor.

e. Office equipment.

f. Commercial washing of aircraft.

g. Initial issue of IMRL equipment or replacement of repairable IMRL items. The replacement of consumable IMRL items is the only IMRL expense chargeable to OFC-50 funds.

h. Packaging and crating of repairable components being readied for shipment to a designated overhaul point (DOP) or other destination off the ship or station.

2. RESPONSIBILITY. Ships, stations, and Marine Air Groups holding OFC-50 funds shall provide materials required for the organizational or intermediate level maintenance of aircraft assigned to active units of the Pacific or Atlantic Fleets. Issues to CNATRA or Reserve units will be provided on a reimbursable basis.

3. DISTRIBUTION OF COSTS. OFC-50 fund holders must make every effort possible to identify all costs to a specific type/model/series (TMS) aircraft. Special care must be taken in the case of pre-expended material, rags, hand tools, lubricants, etc., and expenditures for the repair of GSE. Whenever possible, these "miscellaneous" costs should be charged to a specific TEC rather than to AOMA or AIMA. Activities will apportion "miscellaneous" charges to TMS aircraft at the time of issue whether or not the aircraft have generated any flight hours during the report period. OFC-50 funds expended by a ship during the predeployment readying of aviation maintenance shops and build-up of pre-expended bin material will be apportioned among the TECs of the aircraft in the air wing which will be embarked.

(Source: COMNAVAIRPACINST 7303.11E)

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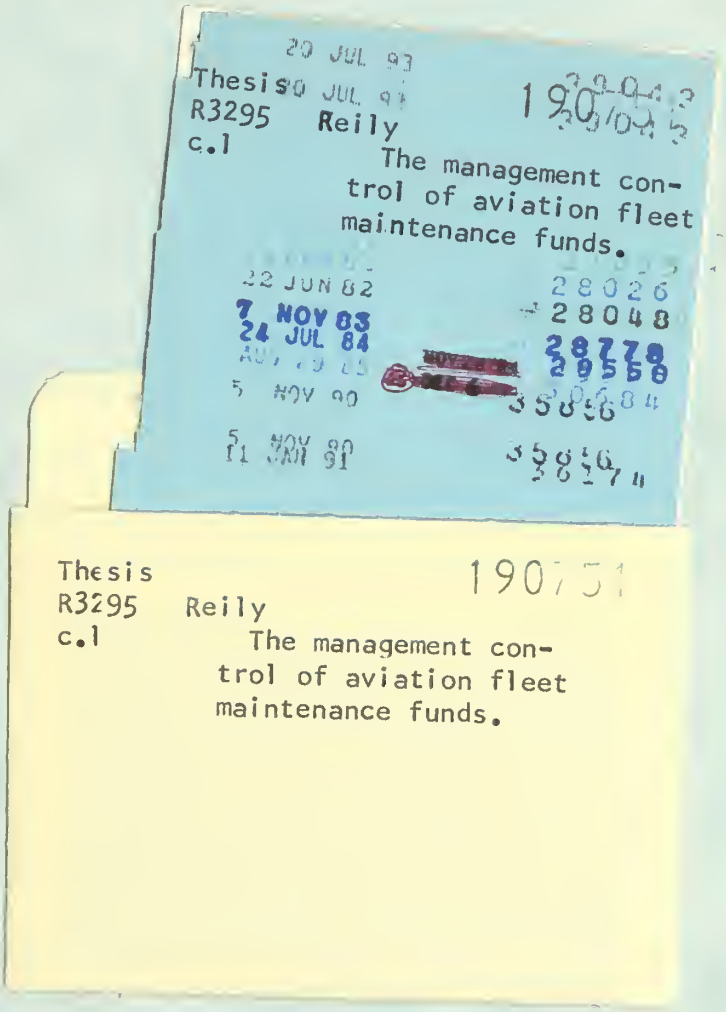
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